The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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MR. JAMES H. CROFTS, STOCK AND SHARE BROKER, AND MINING SHARE DEALER.
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.

Business transacted in all descriptions of Mining Stocks and Shares (British and Foreign), Consols, Banks, Bonds (Foreign and Colonial), Railways, Miscellaneous, Insurance, Assurance, Telegraph, Shipping, Canal, Gas, Water, and Dock Shares.

Business negociated in Stocks and Shares not having a general market value.

Business in Colliery and Iron Shares, and in the principal Wagon and Manufacturing Companies of the North of England and Scotland.

Business in all the principal Cotton Spinning Shares.

Mr. J. H. Crofts, having now established Corresponding Agencies in all the Chief Towns of the United Kingdom, is prepared to deal in the various Local Stocks and Shares at close market prices.

Accounts Opened for the Fortnightly Settlement.

A Daily Price List, issued at 5 P.M., giving latest Quotations up to close of Market. Also, on the 1st of every month a List of all Securities currently dealt in upon the Mining and Stock Exchanges, with latest prices, current dividends, rate of interest yielded at market price, &c., and every Friday a general List containing closing prices of the week.

Mines Inspected.

Bankers: City Bank, London; South Cornwall Bank, St. Austell.

Special Dealings in the following, or part:—

20 Chapel House, £2 2 6	100 Javali, 8s. 6d.	50 Parys Moun., 7s. 3d.
75 Chontales, 14s. 6d.	20 Leadhills, £2 18s. 9d.	30 Rookhope, 13s. 6d.
10 D'Eresby Consols.	100 Llanrwst.	10 Richmond, £11.
20 East Van, £3.	50 North Laxey, 2s. 6d.	50 Van Consols, 10s.
28 Flagstaff, 12s.	50 Penstruthal, 4s. 3d.	50 W. Tankerville, 3s.
25 Hultafall, £3½.	30 Pestarena, £4s. 9d.	

Special Business in Morfa Du Shares.

*** Shares Sold for Forward Delivery (One, Two, or Three Months) on Deposit of Twenty per Cent.

FOREIGN BONDS—ARGENTINE—EGYPTIAN—RUSSIAN, TURKISH, SPANISH, PERU. &c.
SPECIAL BUSINESS in the above, and Fortnighty Accounts opened on receipt of the usual cover.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

RAILWAYS—HOME AND FOREIGN.—SPECIAL BUSINESS in the above, and Fortnightly Accounts opened on receipt of the usual cover.
JAMES H CROFTS, 1, FINCH LANE, LONDON.

MISCELLANEOUS AND TRAMWAY SHARES.—SPECIAL BUSINESS in—

Miscellaneous.	Royal Aquar. (Westm.)	North Metropolitan Tramways.
Alhambra Palace.	London Steam-boat.	Tramway Union.
Brighton Aquarium.	Lawes Chemical.	
	Globe Telegraph.	

Business Transacted in all Miscellaneous Shares (of whatever description) having London or Country Market Values.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.
Bankers: City Bank, London; South Cornwall Bank, St. Austell.
ESTABLISHED 1842.

MR. W. H. BUMPUS, STOCK AND SHARE BROKER, AND MINING SHARE DEALER,
44, THREADNEEDLE STREET, LONDON, E.C.
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.
RAILWAYS, BANKS, FOREIGN and COLONIAL BONDS, TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.
Accounts opened for the Fortnightly Settlement.
A Stock and Share List free on application.

Mr. Bumpus has SPECIAL BUSINESS in the undermentioned:—

100 Almada, 6s.	50 Flagstaff, 10s.	150 Pestarena, £s. 3d.
50 Aberdaunant, 5s. 6d.	150 Gold Run.	20 Pateley Bridge, £4½.
30 Blue Tent, £2¼.	70 Glenroy, 10s. 6d.	10 Richmond, £10¾.
40 Birdseye Creek, 14s.	5 Great Laxey.	15 Roman Grav., £7¾.
25 Colorado, £3 15s. 6d.	50 Hultafall.	50 Rookhope, 13s. 6d.
50 Chontales, 11s.	60 Javali, 7s. 6d.	10 So. Frances, £5.
200 Cedar Creek, 4s. 6d.	45 Kapanga, 30s.	5 So. Condurrow, £10¾.
60 Don Pedro, 10s. 6d.	20 Leadhills, £2¾.	100 Tyn-y-Fron.
100 Derwent, 20s. 6d.	30 Llanrwst, 31s. 6d.	20 Tankerville, £3¼.
25 Devon Consols, £2¾.	50 Marke Valley, 16s. 3d.	10 Van, £18.
20 Eberhardt, £4 13s. 9d.	25 New Quebrada, 36s.	30 Wh. Grenville, £2¼.
15 East Van, £2½.	20 Pant-y-Mwyn, £4.	50 W. Godolphin, 5s.
30 East Caradon, 6s.	100 Penstruthal, 4s. 6d.	25 Wye Valley.
40 Frontino, £2½.	50 Pandora, 15s.	100 Yorke Peninsula.
	35 Port Phillip, 11s. 6d.	

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

WILLIAM HENRY BUMPUS, SWORN BROKER.
Offices: 44, Threadneedle Street, London, E.C.
Bankers—The NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

WILLIAM B. COBB, STOCK AND SHARE DEALER,
62, CORNHILL, LONDON, E.C.
Bankers: The Alliance Bank (Limited).

MESSRS. J. TAYLOR AND CO.,
MINING ENGINEERS AND INSPECTORS,
86, LONDON WALL, LONDON, E.C.,
Have Agents in England, Scotland, Wales, and on the Continent.

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STOCK AND SHARE BROKERS.
Offices: 4, BISHOPSGATE STREET WITHIN, E.C.
Bankers: The National Provincial Bank of England.
Business in every kind of English and Foreign Stocks and Shares at the best market prices for the day; also in TRAMWAY, GAS, WATER, ROLLING STOCK, and INDUSTRIAL COMPANIES SHARES.
Messrs. Owen and Co. possess great facilities for securing advantageous markets for MINING SHARES, as they have opportunities for obtaining exclusive and reliable information relating to the leading undertakings of this description.
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Office of "Tramways Intelligence," 1878.

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9, GRACECHURCH STREET, LONDON, E.C. (Established 28 years)
ALL BUSINESS TRANSACTED FREE OF ANY CHARGE FOR COMMISSION.
Notice to Investors and Speculators.

Mr. Budge has SPECIAL DEALINGS in—

20 Aberllyn, £12.	20 Eastern Extension Telegraph, £7¾.	30 Monydd Gorddu.
200 Almada, 6s. 9d.	45 Fortuna, £4¾.	100 Morfa Du.
130 Australian, £1 9s. 6d.	10 Grogwinion, £3.	20 Miners, £9.
135 Bodidris.	200 Gold Run, 5s. 6d.	60 Mellanear.
35 Blaen Caelan, £3½.	65 Gawton.	70 Marke Valley, 13s.
100 Cambrian.	30 Gorsedd and Mer., £4.	25 Pennant, £3¾.
50 Cakemore.	35 Hornachos, £12½.	125 Paulcilio, 22s.
75 Colorado, £3 18s. 9d.	40 Hughes' Locomotive.	200 Pestarena, 4s. 9d.
25 Chapel House, £3.	50 Hultafall.	15 Port Phillip, 11s. 3d.
30 Caron, £3¾.	125 I.X.L., 4s.	25 St. Harmon.
4 Carn Brea, £37.	100 Javali, 7s. 9d.	20 Richmond, £10 6s. 9d
115 Chicago, 20s. 9d.	50 Llanrwst.	200 Rossa Grande, 2s. 9d.
200 Don Pedro, 10s. 6d.	10 Liverpool Unit. Tramway, £13¾.	20 South Frances.
40 Devonport and Tiverton Brewery.	3 Lisburne.	15 Red Rock, £2¼.
10 Dublin Tram., £15¾.	75 Lovell.	100 Yorke Penin., 4s. 6d.
50 East Caradon, 8s. 9d.	100 Last Chance, 17s.	25 W. Wye Valley, £2¾.
100 Exchequer.		35 Wye Valley, £2¾.

BUYERS or SELLERS of any of the above, or holders of any Stocks or Shares not readily marketable, will do well to apply to Mr. Budge.
All bargains settled promptly.

MESSRS. PETER WATSON AND CO.,
54, OLD BROAD STREET, LONDON, E.C.
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RAILWAYS, BANKS, DIVIDEND LEAD MINES, &c.
Bankers: The Alliance Bank (Limited).
A CIRCULAR published MONTHLY. Single copy, 6d.; annually, 5s.

MR. ALFRED E. COOKE,
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ESTABLISHED 1853.

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Single number, three stamps; 2s. 6d. quarterly.
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Established 1853.

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Established 1853.

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[Established 1848.]

BUSINESS in the FOLLOWING SHARES:—

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D'Eresby Mountain.	South Frances.	Colorado, £3 18s. 6d.
East Van, £2¾.	Tankerville, £3½.	Chontales, 12s.
Grogwinion, 44s.	Van, £17½.	Don Pedro, 10s. 6d.
Great Laxey, £17⅝.	Wye Valley, £13¾.	Eberhardt, £4¼.
Leadhills.	West Chiverton, £5½.	Flagstaff, 10s. 6d.
Llanrwst, 36s.		Frontino, £2½.
Morfa Du.	General Credit.	Hultafall, £3 2s. 6d.
Pandora, 11s. 6d.	Telegraphic Construct.	Javali, 7s. 9d.
Pant-y-Mwyn.	North Metropolitan.	Last Chance, 17s. 6d.
Penstruthal, 4s. 3d.	London Steam-boat.	Kapanga, 31s.
Parys Mountain, 6s.	Peninsular and Orien.	Port Phillip, 11s. 6d.
Pateley Bridge, £3¾.	Provincial Tram.	Richmond, £10 16s.
Roman Grav., £7 6s. 3d	Wolverhampton Tram.	Santa Barbara, 26s.
	London (Limited).	

Bankers: LONDON AND WESTMINSTER.

FERDINAND R. KIRK, STOCKBROKER,
5, BIRCHIN LANE, E.C.

FOREIGN MINING.—A large business continues to be done in Richmond, Eberhardt, Colorado, New Quebrada, New Zealand Kapanga, Frontino, and Chontales, both for cash and for fortnightly settlement. Some of these are going higher.

COLLIERIES.—Buyers or sellers of Bilson and Crump, Newport Abercarn, Cardiff, and Chapel House should apply for a quotation.

ATTENTION is invited to Port Phillip, Don Pedro, Sierra Buttes, Javali, Gold Run, and United Mexican.

MISCELLANEOUS.—Several securities are now well worth buying. Particulars on application.

"THE WEEK."—A Separate Edition from that which appears in the *Mining Journal* is published every Wednesday evening, containing "Notes and Hints on the Stock Markets," with Closing Prices. May be had on application.
Bankers: London and Westminster, Lothbury.

MESSRS. EKINS AND CO.,
STOCK AND SHARE DEALERS,
14, QUEEN VICTORIA STREET, LONDON, E.C.
See this week's report of South D'Eresby. The shares are rising fast in value.
Bankers: Metropolitan.

MR. JOHN B. REYNOLDS, STOCK AND SHARE DEALER,
70 AND 71, BISHOPSGATE STREET WITHIN, LONDON, E.C.
Established Twenty Years.
Bankers: London—City Bank.
Cornwall—Messrs. Tweedy, Williams, and Co., Redruth.

WILLIAMS AND COMPANY,
STOCK AND SHARE DEALERS, MINING AGENTS, &c.,
43, MILDMAY CHAMBERS, 82, BISHOPSGATE STREET WITHIN, LONDON, E.C.,
Have FOR SALE the FOLLOWING SHARES at net prices:—

10 Assheton.	10 Court Grange.	10 Pateley Bridge, £4.
100 Aberdaunant, 5s. 3d.	15 Denbighshire, £1¼.	20 Pant-y-Mwyn, £5 5s.
12 Blue Tent, £2¾.	20 Don Pedro, 10s. 9d.	10 Parys Mount., 5s. 6d.
20 Cedar Creek, 5s. 3d.	10 Flagstaff, 12s.	40 Penstruthal, 4s. 6d.
25 Chontales, 12s. 6d.	25 Grogwinion, £2¾.	10 Richmond, £9¼.
10 Cambrian.	5 Gorsedd and Merllyn.	5 Roman Gravels, £7¾.
	15 Javali.	

Stocks and Shares purchased, sold, or exchanged at close market prices free of commission, either for cash or account.
Closing Prices forwarded to clients daily free of charge on application.
Bankers: London Joint-Stock.

MR. T. E. W. THOMAS, SHARE BROKER,
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Established 1857.

The following are the latest prices at which business could be done. Where the difference between the buying and selling price is wide transactions may be effected at an intermediate price:—

	Buyers.	Sellers.
Aberllyn	£ 10	£ 11
Argentine	2s. 6d.	5s.
Colorado	3¾	4
Chontales	10s.6d.	12s.6d.
Clementina	1	1¼
Denbighshire	1¼	1½
Devon Great Consols	1¾	2¼
Don Pedro	10s.	11s.
Eberhardt	4½	4¾
East Caradon	6s.	8s.
East Van	2¾	3
Exchequer	4s. 6d.	5s.6d.
Flagstaff	10s.	12s.
Frontino	2¼	2½
Glenroy	10s.	12s.6d.
Glyn	10s.	12s.
Grogwinion	2¼	2½
Great Laxey	17	18
Hultafall	2¼	3¾
Last Chance	¾	1
Leadhills	1¾	2
Mellanear	3¾	4
New Quebrada	£ 1¼	£ 1¾
New Zealand Kapanga	1½	1¾
Pant-y-Mwyn	4¾	5¼
Parys Mountain	5s.	6s.
Pateley Bridge	3¾	3⅞
Penstruthal	4s.	5s.
Plynlimmon	1s.6d.	2s.6d.
Richmond	10½	10¾
Roman Gravels	7¾	7½
Rookhope	12s.6d.	13s.
South Condurrow	10	10¼
South Frances	4¼	4¾
Tecoma	2s.	4s.
Tankerville	3½	3¾
Tincroft	6¾	7
Van	17	18
West Chiverton	5	6
West Wye Valley	2	2¼
W. Grenville	1¾	2
Wye Valley	1¼	1½
Yorke Peninsula	3s.6d.	5s.

MR. W. MARLBOROUGH, STOCK AND SHARE DEALER,
29, BISHOPSGATE STREET, LONDON, E.C. (Established 22 Years),
can sell the following SHARES, at prices annexed:—

30 Birdseye, 16s. 6d.	60 Flagstaff, 11s. 6d.	20 Pant-y-Mwyn, £5.
20 Blaen Caelan, £4.	10 Grogwinion, £2¾.	10 Pennant.
30 Cambrian, £2 10s.	20 Glenroy, 10s. 6d.	50 Port Phillip, 12s.
50 Chontales, 12s. 6d.	20 Gorsedd & Mer. £4½.	50 Parys Mountain, 5s 6d
20 Chicago, £1 2s. 6d.	25 Great Holway.	10 Pateley Bdge., £3 16 3
40 Colarado, £3 18s. 9d.	25 Hultafall, £3 2s. 6d.	100 Penstruthal, 4s. 6d.
30 Court Grange, 17s. 6d	30 Last Chance, £1.	10 Richmond, £10 16s 3d
5 Cape Copper, £30¾.	15 Leadhills, £2 5s.	40 Rookhope, 13s. 9d.
30 Cakemore Colliery.	20 Javali, 8s.	10 Roman Grav., £7¾.
75 Don Pedro, 12s. 6d.	20 Llanrwst.	15 Tankerville, £3¾.
25 East Van, £2 7s. 6d.	40 Morfadu, 15s.	40 Tyn-y-Fron.
10 Eberhardt, £4 16s. 3d	25 N. Zea. Kap., £1 12s 6	4 Van, £18¾.
100 Exchequer, 5s. 6d.	20 New Quebrada, £1¾.	5 W. Chiverton, £5 2s 6
20 Frontino, £2 3s. 9d.	35 Pandora, 16s.	

SPECIAL BUSINESS in 50 Ligno Mineral Wood Paving Company, £5 shares, fully paid.
Shares bought and sold at net prices. Telegrams promptly attended to.

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"INVESTMENTS AND SPECULATIONS" for 1878,
Price Sixpence.

Mr. Alfred Thomas advises the immediate purchase of shares in Roman Gravels and Gorsedd and Merilyn, as both mines are looking extremely well. A small advance in the price of lead would cause a good rise in market prices of shares. Lowest price of each upon application.

SAFE PROFITABLE INVESTMENTS.
Dividends 4 to 6 and 8 per cent. per annum upon outlay.
Read SHARP'S INVESTMENT CIRCULAR for OCTOBER. Post free.
It is a "Safe Guide" to Investors, Shareholders, Capitalists, Trustees.

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For Sound Advice, Dividends, Reports, Markets, Prices, &c.,
Read SHARP'S INVESTMENT CIRCULAR for OCTOBER. Post free.
It is a Reliable Guide, and contains all the Safest Investments of the day.

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Established 1852.—Bankers: London and Westminster, Lothbury, E.C.

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Mr. Thompson transacts a business in every species of Stock Exchange and Mining Securities.
Mr. Thompson affords reliable information to investors, and can give, when desired, a list of first-class Stocks and Shares, yielding 4 to 10 per cent. dividends upon present prices.—Mr. Thompson's weekly Circular may be had on application.

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JOHN RISLEY (SWORN), STOCK AND SHARE BROKER,
38, CORNHILL, LONDON.
Railway Stocks Bought or Sold at ¼ per cent. commission, and ⅛ per cent. on Foreign Stocks.
Speculative business transacted in Railway and other Stocks for the fortnightly settlement on receipt of our usual 5 per cent. cover.

MESSRS. JONES AND HOUSTON, 25, CROSBY HALL CHAMBERS, LONDON, E.C.
SPECIAL BUSINESS in the following SHARES and SECURITIES:—

100 Aberdunant, 5s.	10 Flagstaff, 12s. 6d.	10 Pateley Bridge, £4.
50 Argentine, 4s.	25 Frontino, £2¾.	100 Penstruthal, 4s. 3d.
30 Assheton,	30 Glenroy, 12s. 6d.	20 Pant-y-Mwyn.
45 Almada, 7s. 6d.	10 Gorsedd and Merllyn, £4 12s. 6d.	30 Port Phillip, 11s. 6d.
20 Birdseye Creek, 17s.		50 Plynlimmon, 3s.
50 Bodidris, 26s.	30 Grogwinion, £2¾.	10 Richmond, £9½.
20 Blue Tent, £2¾.	15 Gt. Laxey, £18.	5 Roman Gravels, £7¾.
100 Cedar Creek, 4s. 9d.	30 Gold Run.	10 South Aurora, 3s. 9d.
10 Colorado, £3½.	15 Hultafall, £3¼.	5 So. Frances, £5.
50 Chontales, 11s. 9d.	1 London Steam-boat (7 per cent. debenture), £118.	10 Tecoma, 3s. 6d.
100 Central Van.		5 Tankerville, £3¼.
50 Cardiff & Swan., 25s.		20 Thorp's Gawber Col., offer wanted.
10 Chapel House, £3.	100 North Laxey, 3s.	10 Van, £18.
30 Denbighshire, £1¼.	10 N. Zealand Kapanga, £1¾.	10 Wheal Newton, o. wtd
10 D'Eresby Con., £10.	10 New Quebrada, £1¾.	10 W. Wye Val., £2¾.
100 Don Pedro, 10s. 6d.	30 Pandora, 13s.	5 Wye Valley, £1¼.
10 Eberhardt, £4 7s. 6d.	30 Parys Mount., 5s. 6d.	30 Yorke Peninsula.
20 East Van, £2¾.		

PANT-Y-MWYN LEAD MINE.
Holders of these shares desirous of selling are requested to communicate with ourselves, inasmuch as we are in a position to do business in these particular shares with great expedition. Cash on delivery of stock.
Bankers: London and Provincial.

WILLIAM GABBOTT, STOCK AND SHARE DEALER,
8, DRAPER'S GARDENS, THROGMORTON STREET,
LONDON, E.C.

MESSRS ENDEAN AND CO., 85, GRACECHURCH STREET
LONDON, E.C., STOCK AND SHARE DEALERS.
Established in 1861.
Bankers: Barclay, Bevan, and Co., and London and Westminster Bank, Lothbury.
English and Foreign Stocks and Shares and all other Securities dealt in for cash or account.

LLANRWST MINE.
Special business in these shares at close prices. Buyers and sellers should communicate with us.

TO INVESTORS.
COLLIERY SYNDICATE (LIMITED).
STORFORTH LANE COLLIERY.
Before purchasing Shares or Debentures in the above, intending investors will do well to consult Messrs. Endean and Co.

MR. TIMOTHY HUGHES,
MINING AGENT AND SHAREDEALER,
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Reliable information given respecting Welsh and Manx Mines.

FOR SALE (the whole or part):—

100 Cambrian, £2¾.	50 Hornachos, £14.	50 Morfa Du, 15s.
50 Hultafall, £3.	50 Temple, £6	100 Pandora, 12s. 6d.

200 Bettws-y-Coed, for time on at less than quoted price.
40 Pant-y-Mwyn, for which offers are wanted, as they are to be sold out against a party having bought them for account, and not paid for them. Offers received until Wednesday next.
BUYER of 200 Bettws-y-Coed at 19s. for cash.
Address, H. Wilkins, 3, Heybourne Villas, Tottenham.

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Has had considerable experience in METALLIC MINING in CORNWALL and the NORTH OF ENGLAND; also 15 years on the Continent. Speaks English, French, German, and Spanish, and has had charge of mines for many years. Practically acquainted with the most modern dressing apparatus, the most economical pumping and winding engines, boring machines, smelting, and general steam and water appliances. Inspections undertaken; plans of mines and assays carefully executed. Unexceptionable references.
Address, Mr. Nance, 22, Stanly-street West, North Shields, Northumberland.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.*—No. LXXXIX.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal).

[The Author reserves the right of reproduction.]

SECTION V.

ARTIFICIAL OR PORTLAND CEMENT.†—Artificial cements are now extensively manufactured, with every grade of binding power, especially near the Rhine, in Silesia, Stettin, &c. According to Winckler they are distinguished from the natural cements in that they contain no caustic lime, but form a very basic silicate, containing from three to four of base to one equivalent of acid (silica, alumina, oxide of iron); under access of water it decomposes, forming a sesquibasic silicate of lime, combinations of lime and clay and caustic lime, which with free access of air combines with carbonic acid. Winckler has really proved that this happens by treating hardened cement with water free from carbonic acid, obtaining as residue a combined silicate and aluminate of lime.

Hydraulic cement is prepared in the following manner. The necessary materials are mixed in proper proportions, either dry as a powder, which is afterwards slaked with water, or under constant addition of water. In both cases the resulting heap is formed into a plastic mass. From this plastic mass small balls of the size of the fist are first formed and dried, and afterwards burnt by being placed among pieces of charcoal or of coke in kilns, having a pretty good draught. The regulating of the heat of the kiln is of great importance, since if the heat rises too greatly a slag is formed, which falls generally to powder in the air, and does not harden; if the heat is too little the cement contains too much uncombined lime, which heats too greatly on the addition of water, and then frequently falls asunder. Well burnt cement appears under the microscope as having been completely melted, but is still porous, resembling pumice stone, usually of a greener colour, and on powdering divides itself into thin leaves, which lay close up on each other, and owing to their thinness permit a decomposition throughout the whole mass by water.

Tests as to the compactness and impermeability of cement were instituted for the harbour works at Havre. To ascertain the first two bricks were formed of cement, the one hardened under water and the other in air. The longer sides were planed, and by means of an iron rod the brick was suspended; a second iron rod was similarly clamped to the lower end of the brick, and carried the weights, which were successively added until breakage. From the weights added the strength of the cement was calculated. To test the impermeability of the cement two cylinders, about 4 in. in diameter and 6 in. long were formed, the one being hardened in air and the other under water. A brass cover was screwed on to both ends of the cylinder so tight that no water could escape between the covers and the cement cylinders. To the upper cover a leaden pipe was attached, communicating with water in a reservoir giving 16 ft. head of water. The experiments were carried on with mixtures of cement varying in proportion from 1 of cement to 2 of sand, up to 1 of cement to 7 of sand. The first proportion proved to give the strongest and most compact mortar. Amongst the cements the English proved to be the best.

As clay those appear the best which contain particles of felspar and mica, but which are free from quartz and sand. Two saleable samples of clay showed the following composition:—

1.—Potash, 1·00; soda, 1·66; lime, 54·11; oxide of iron, 5·30; Alumina, 7·75; silica, 22·23.

2.—Potash, 1·70; soda, 1·50; lime, 62·23; oxide of iton, 1·90; alumina, 4·00; silica, 22·22.

The first gives three equivalents of bases and one of acid, and the second four equivalents of bases to one of acid.

Winckler has succeeded in making cement from clay and lime; it is, however, less suited to resist the action of carbonic acid.

The hardening takes place much more slowly than in the case of Roman cement; this artificial cement, however, must be carefully kept and protected from damp. Neither the natural nor artificial hydraulic cements are previously slaked with water, and cannot be prepared in larger quantities than is requisite for the momentary purpose.

For transport the cements are usually packed in casks containing 3·32 cubic feet (or 375 lbs.) of pressed cement, which in the loose state occupies 5 cubic feet: 1 cubic foot of loose cement weighs about 75 lb., its specific gravity is 1·215; pressed and dry 1 cubic metre weighs 3750 lb., and has a specific gravity of 1·831; when worked up into mortar, pressed and dried, 1 cubic metre weighs 3900 lb., its specific gravity being 1·890. The following gives the weight and specific gravity of various cements and mortars:—

	Weight per cub. ft.	Specific gravity.
Portland cement	Lbs. 75	1·21
Roman cement	64	1·03
Ruzzolane	53	0·86
Santorin	52	0·85
Trass	56	0·91
Hydraulic lime from Wildau ...	51	0·82
ditto Krienberg ...	61	0·99
Cement from Vossy	59	0·96
ditto Rauilly	86	1·39

The theory of the reactions which induce the hardening of the hydraulic cements and mortars has been variously explained, and as yet the correct explanation has not been demonstrated. Whilst Fuchs has proved by experiments that under the influence of water a chemical combination between free silica and lime occurs, Winckler holds the opinion that this takes place only in the case of hydraulic mortars, which, like Roman cement and trass mortar, contain caustic lime in a free condition; and, on the contrary, the other cements (which according to Winckler contain no caustic lime in a free condition, in which he includes Portland cement) under access of water decompose into free caustic lime, and a combination between silica and lime and alumina and lime, such as is formed in the case of Roman cement between caustic lime and free silica, or acid silicates. Both these explanations find support.

BETON, or CONCRETE, is formed by mixing hydraulic mortar with sand, gravel, broken bricks, &c, and serves in submarine work for forming foundations for buildings, the concrete ready mixed being poured into the moulds. In the case of walling underground it is often used for forming the foundations of walls or beds of underground machinery, for filling up space behind timbering or walling, especially in shafts, and sometimes behind iron lining of shafts. The quality of a concrete is often tested by rotating a loaded spindle or drill on a block of concrete, and noting the number of revolutions, the load required for penetrating a given depth, and the time required. The greater the length of time, the greater the load and number of revolutions per minute, so much the better is the concrete.

MOSS is sometimes used in metalliferous mines, where the water having access to the wall is saline or ferruginous, so that the resulting deposition on the moss forms a solid compact mass.

CLAY is often used for dams either against fire or water underground.

A mortar composed of sawdust from soft wood, mixed with as much fresh slaked lime as is necessary to cause the mortar to stick, has been recommended by Von Hingenau in the Austrian "Journal for Mining and Metallurgy." The mixture forms a soft mass, resembling felt, and is unaffected by a blow. The mortar is said to be very suitable for covering walls, especially walls which would otherwise be damp.

The brickwork, or walling, used in mines is carried out in three ways—as ordinary plain walls, as pillars, and as arching. The purposes for which it is used may, like that of timbering, be classed under three heads—the walling in levels or roads, the walling of shafts, and as water-tight lining of shafts, which will be considered under the chapter on "cuvelage," or water-tight "Ausban."

1.—Plain walling. In speaking of an ordinary wall, the two vertical sides of the walls are denominated respectively the face and the back of the wall. The bottom part of the wall on which it rests is denominated the foot. The resistance which a wall opposes to pressure exerted against it is equal in the case of a vertical pressure from above to the resistance which the material of the wall offers to crushing. The modes in which substances may be broken by compression are—by the splitting up of the substance into a number of prismatic fragments, the lines in which the substance is split being parallel to the direction of the crushing force, as is often seen in the case of coal in the neighbourhood of a large goaf; by bulging or buckling, in the former the ductility of the mass allowing it to swell out, in the latter by bending; where the substance, instead of being fibrous or flexible, is rigid the material gives way by cross breaking; and, lastly, by shearing. Brick and stone usually give way by a combination of splitting and shearing. The following gives the resistance of various materials (used in walling) to crushing in pounds per square inch:—

Brick, from 500 lb. to 1000 lb.; fire brick, 1600 lb.; sandstone, from 2500 lb. to 5000 lb.; limestone, from 4000 lb. to 5000 lb.; chalk, 300 lb.; granite, from 5000 lb. to 10 000 lb. Where the wall is built dry, as the pack walls used underground, the resistance varies from a quarter to two-thirds of the above.

In the case of a side pressure against a wall the latter resists by means of its weight, by means of the adhesion of and the frictional resistance between the various parts of which the wall is composed. Where a good mortar is used the adhesion will generally be greater than the friction; the latter will be the greater near the foot of the wall. When a wall is unable to resist the pressure it may give way either by being slid or pushed back, or, as is more generally the case, it is overthrown. If we take any horizontal section of a wall the centre of resistance for this section will be found by finding the resultant (according to the parallelogram of forces) of the weight of the wall above this section acting vertically downwards through its centre of gravity, and of the pressure acting against this upper part of the wall.

The line of the resulting force will pass through some point in the horizontal section, and this point is the centre through which the resultant of the resistances offered by the lower part of the wall will act. If this point be determined for several successive horizontal sections, and these points be joined, the resulting line forms the so-called "line of resistance." So long as this line falls within the wall it is evident that the wall cannot be overthrown. The stability of a wall, however, requires that not only shall the line of resistance fall within the wall, but also that it shall not approach very near to the outer surface of the wall, since, if the resultant pressure were to be concentrated at a point near the outer surface of the wall the masonry would be liable to be broken and crushed at this point, and finally weaken the wall close up to the line of resistance.

The line of resistance of a rectangular wall forms an hyperbola, approaching towards the foot nearer the outer surface of the wall, hence it is that retaining walls are built with the inner side vertical and the outer side inclined, the wall being broader at the foot than the top. In other cases the wall may be built of the same thickness throughout, but leaning inwards at the top. To prevent a wall being slid bodily at the foot, which might readily occur on damp clayey soil, it is usual to bed the foot some inches deep in the ground. The building and bonding of brick walls underground follows the same rules as those at the surface. English bonding consists of a course of "stretchers" (or bricks laid lengthwise) and a course of "headers" (or bricks laid crosswise) alternately; in Flemish bonding each course consist of alternate "headers" and "stretchers." Where large spaces, as underground engine-houses, ventilating furnaces, pits, porches, &c., have to be walled, the spaces left between the wall and the sides of the excavation, owing to the unevenness of the latter, must be well filled with broken stones and bricks, so as to prevent any liability of large portions of the sides detaching themselves, and falling suddenly on to the brickwork. When the building of a wall can only be carried on intermittently, the line of junction should each time be stepwise and not toothed. In the case of water-tight walling the joints should be somewhat thicker than otherwise, since it must be remembered that all bricks are to a certain extent porous, and the water must be kept back by means of the mortar between the bricks, also owing to this all water-tight walling should be three bricks thick. The size of the joints is usually about ¼ in., for water-tight walling ½ in. In the case of dry loose walling the chief points to be attended to are to lay the stones so as best to fill up the openings which result more or less from the irregularity in the shape of the stones, and in order to hold the wall together large stones should be inserted here and there crosswise to the direction of majority. The stones should be piled up as much as possible in imitation of brickwork, so that the centre of one stone will be immediately above or below the junction of the next two above or below, and hence each stone will rest on at least two others.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. VON GRODDECK, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

† Lottner, Manual of Mining, p. 497.

THE MINERAL RESOURCES OF THE TRANSVAAL—No. II.

Continuing the notice of the resources of the Transvaal in last week's *Mining Journal*, it may be mentioned that the physical and geological features of the colony were very fully referred to in a paper recently communicated to the Royal Geographical Society of London by Mr. Frederick Jeppe, in the form of notes to accompany his new map. The territory of the Transvaal is situated between 22° 15′ and 28° 20′ south latitude, and between 25° 10′ or 26° and 32° 10′ east longitude, but it is difficult to inspect the map without concluding that the eastern boundary must ultimately be extended by arrangement with Portugal, so as to make the Limpopo or Krokodel river, from the confluence of the Limvubu to the ocean, and thence the sea-coast southward, the boundary of the territory. This, however, is a matter for consideration hereafter, although the sooner the negociations are entered into and concluded the better will it be for the Transvaal and for what we may hope at no distant date will be the Dominion of South Africa.

The two principal rivers forming the southern and south-west and northern and north-west boundaries of the Transvaal are the Ky Gariep or Vaal and Crocodile, afterwards called the Limpopo, Oori, Bembe, Miti, and Inhampoora. The tributaries both of the Vaal and of the Crocodile within the Transvaal are very numerous, but of all the rivers draining the country to the west of the Drakensberg range none are at present available for navigation. In January, 1871, Mauch made a voyage down the Vaal river in a flat bottomed boat 10 ft. long and 4 ft. broad from the junction of the Mooi river to Hebron in Griqualand West (about 300 miles); and as to the probability of rendering the Vaal river navigable, he says that with reference to the importance of the Vaal river as a channel of communication for larger boats and small steamers in the present state of the river it would be impracticable even with considerble high water, but with a small outlay the river might be made available for such vessels partly by avoiding the rapids and falls, extending mostly only a short distance, by means of canals, partly by clearing certain branches of the river now filled with loose stones and rocks, and partly by the removal of dykes running across the river, and of willow stumps impeding its passage. The Crocodile appears to be practically worthless for navigation.

The careful consideration of the hydrography and orography of the country leads to the conclusion that railways are the means of communication that must be depended upon for the transport of produce and working materials, and already two lines are projected, one to go northward from the Cape Colony and another from Delagoa Bay westward. For the present the latter may be left out of consideration. The territory appears to be unusually attractive for railway construction; the engineering work would be comparatively light. Two ranges of mountains of inconsiderable height intersect the country from west to north-east. The Southern range—Magalies Berge—stretches from the Marico river to Pretoria, and another extends from the Marico to Pokiones Kop, north of the Olifants river, consisting of detached ranges, while the Drakens Berge or Kathlamba Mountains stretch across the eastern boundary from Natal to the Olifants river. This considerable mountain range attains an altitude of 5000 to 6000 ft. in some high peaks near Lydenberg. It forms the termination of the Hooge Veldt, or high plateau, which slopes gradually down to the sea in several distinct terraces, from which numerous rivers descend in beautiful falls and cascades to the fertile plains below. In the southern parts of the Transvaal are some low ranges of hills in the Makwasi Berge, Gats Rand, Houdbosh Rand, and Zuikerbosh Rand, near Heidelberg. The Witwaters Rand forms the termination of the Hooge Veldt, stretching over the whole breadth of the country. These hills and mountains appear to be curiously destitute of rivers, and even a decent rivulet is comparatively rare considering the configuration of the country.

But the absence of more than small streams is to a great extent compensated for by other natural gifts. As to Capt. Elton's notions of the navigability of the Limpopo he is evidently mistaken, or must have sounded in an exceptional hole in the river bed to find it "a broad, deep stream about 200 yards wide," as all other explorers report it to vary from knee deep to 3 ft. deep at the various places where they crossed. The only lake in the Transvaal is Lake Chrissie, on the New Scotland settlement; it is 14 miles in circumference, and of considerable depth, and is on the Hooge Veldt, about 14 miles from Klipstapel. But small pools of water, called pans, are found all over the country, and are particularly valuable during the winter season on the Hooge Veldt and other parts scarce of water. There are valuable salt pans in some parts of the Transvaal supplying the inhabitants with the necessary commodity.

The principal are near Pretoria, on the Vaal river, near Schoen Spruit and Bloemhof, and along the banks of the Harts river. Of mineral springs there are some in the district of Utrecht, on the White river, a small tributary of the Pongola. They are sulphureous, and some of them have a considerable heat. There is also a warm saline spring on the Assagaai river, a cold sulphureous spring on the south-west side of Makatees Kop, and a sulphuretted tepid bath near Doornberg, on the Pifan river. Mauch found some sulphurous hot springs close to the Elands Spruit, north of New Scotland, but the best known are those of the so-called Warmbad, in the district of Waterberg, visited by invalids from all parts of the Transvaal and neighbouring states. It appears to correspond with the waters of Wildberg, Gastein, Pfaffers, Ragatz, and Baden-Baden, the most renowned of the European spas, which are noted for their great success in the cure of gout, rheumatism, old sores, paralysis, nervous debility, scrofula, and neglected catarrh.

From Mauch was obtained the first knowledge of the geology of some parts of the country, and to him is also due the credit of the first discovery (on July 28, 1867) of the gold at the Tatin which created so much sensation at the time, and was the commencement of the golden era dawned upon south-eastern Africa. Mr. Hübner, a German geologist and mining engineer, the companion of Edward Mohr, gave a good account of the western portion of the Transvaal through which he travelled, while Dr. E. Cohen, the eminent lithologist, "Privat Docent" in the University of Heidelberg, supplied the first account of the geology of the Marabas Stad and Lydenburg formations, and the prominent features of the region between the gold fields and Delagoa Bay. The gold, copper, lead, cobalt, iron, and coal deposits were briefly referred to in last week's *Mining Journal*, and it was mentioned that the minerals which promise to be of the greatest importance to the Transvaal are coal and iron, and these have hitherto been scarcely referred to. All the varieties of iron ore—iron glance, clayband, brown iron ore, magnetic iron, &c.—are found in different parts of the Transvaal, but hitherto the ores have only been used by the natives in making weapons and ornaments. Some of the iron is reported to be equal in quality to the best Swedish. But it is the existence of immense coal beds which must be considered the principal wealth of the Transvaal. The whole of the south-eastern part from the Natal boundary through the districts of Utrecht and Wakkerstroom as far as New Scotland, and even higher up, is one extensive coal field, branching off to the east as far as Hlafunga's Kraal, near St. Lucia Lake, and to the north-west as far as Steenkool Spruit (which is about 57 miles south-east of Pretoria), and south-west across the Buffalo and Klip rivers into Natal and the Orange Free State. The coal on Belela's Berg, between Wakkerstroom and Utrecht, cropping out on the face of the mountain, on a seam more than 10 ft. thick, is of very superior quality. and is extensively used for the household and smithy, and by the farmers living on the elevated plateau at New Scotland, and along the Hooge Veldt, where wood is scarce, it is almost the only fuel used. Mr. Wilson, superintendent of gasworks in Cape Town, finds it a good gas and house coal, but not quite so good as Welsh for steam; yet a sample analysed by him yielded 78·20 of carbon and only 7·20 per cent. of ash, thus very nearly assimilating with the Welsh coal used on the Cape Railway line, which yields 81·0 carbon and 6·40 ash. Mr. Wilson adds —"All that is wanted is an easy outlet and cheap transport to the coast; then farewell to the importation of Welsh steam coal."

ON THE MANUFACTURE OF BRIQUETTES (PATENT FUEL) IN THE AACHEN DISTRICT.*

Briquettes can only be manufactured successfully, from a commercial point of view, in districts where the value of the small coal is about one-fourth that of the large or lump coal, and where the former as dust is unsuitable for fuel. The binding mediums used for making briquettes may be classified as mineral or vegetable, the former comprising such substances as loam, clay, gypsum, lime, &c. whilst the latter include starch, pitch, and coal tar *(sic)*. When mineral agents are employed the result is generally unsatisfactory, combustion being imperfect, and the briquette readily affected by moisture; also they do not possess sufficient cohesion to resist the wear and tear of transport. Notwithstanding these drawbacks they are extensively used in the district of manufacture, but for household purposes only Those made with the aid of vegetable substances, especially tar, though higher in price are far superior, being good steam producers, and when made of small size, and the firing is carefully attended to, there is but little smoke given off.

The process of manufacture is as follows:—After mixing the coal dust with certain proportions of tar, or other cementing medium, in a suitale mill, hot air or steam is forced through the compost until the tar, &c., is melted; the mixture is then pressed either into rectangular moulds or through tubes. From 60 to 74 tons (60,000 to 75,000 kilos.) are made every ten hours. At Kolscheid, near Aachen, at the present time, there is a factory which turns out 100 tons of briquettes daily, which quantity, if necessary, could readily be increased to 200 tons. Anthracite, bituminous and gas (Cannel) coal are used.

Cost of production p. 2204 lbs. (1000 kilos.)					
Tar	2s. 6d.	to	4s. 0d.	(2·5 to 4·0 marks)	
Manufacture.....	1	2½	to 1	7½	(1·2 to 1·6 „)
Interest on plant, &c...	0	7½	to 0	9½	(0·6 to 0·8 „)
Total	4s. 4d.	to	6s. 5d.	(4·3 to 6·4 „)	

The above sum is exclusive of value of coal dust, which, as before stated, should not exceed one-fourth the value of the lump coal.

— By HR. HILT: Wochenschrift des Vereines Deutscher Ingenieure, No. 2.

* From JAMES FORREST'S "Abstracts of Papers in Foreign Transactions and Periodicals," for the Proceedings of the Institution of Civil Engineers

BICYCLE ALARUM.—An ingenious automatic bicycle alarum bell has just been introduced by Mr. F. LEONARDT, of Ludgate Hill, Birmingham. It consists of two brackets so constructed as to form the bearings for a vertical rod, which is capable of moving like an axle. These bearings are fastened one to the front fork and the other to the handle of the bicycle. An arm affixed to and extending at right angles from the vertical rod carries a small wheel, having on one side a hammer, which strikes a hemispherical bell attached to the other end of the arm each time the small wheel rotates. A peculiarly formed bent lever, provided with a spring at one end and a collar to receive the vertical rod at the other, is so fixed that under ordinary circumstances the spring holds back the arm, and keeps the small wheel away from the bicycle wheel. The bell can at any instant be set ringing by a slight pressure of the thumb against the spring

end of the bent lever, by which means the arm on the vertical rod brings the small wheel against the tyre of the bicycle wheel, and causes such small wheel to rotate rapidly and sound the alarum. The advantages claimed for the new alarum are that it rings only when required, that it cannot get out of order, and can be fitted to any bicycle in a few minutes by means of a screwdriver only. All that has to be done is to screw the large bracket on the front fork, and the small bracket on the handle, and place the vertical rod between them, so that the india-rubber tyre of the small wheel falls on the underside of the bicycle tyre. The alarum is ornamental in appearance, and very effective.

THE IRON AND STEEL INSTITUTE IN PARIS.

[Concluded from last week's Journal.]

THE RESOURCES OF THE IRON MANUFACTURE IN FRANCE.

BY PROFESSOR S. JORDAN, OF PARIS.

This paper, the first portion of which was published in last week's *Mining Journal*, gave such an account of the coal and iron deposits as to permit of a sound opinion being formed as to the resources at the disposal of the French ironmasters, and the extent to which they are utilised by them. The portion already published referred to the principal coal-bearing districts of France, and described the Northern coal district, the Burgundy, the Central, the Loire, the Aveyron, and the Alais coal district, as well as briefly mentioning the smaller coal deposits of France, which for the present are in abeyance in consequence of the want of cheap transport, and which are of no great interest to the ironworks. Mr. Jordan than proceeded to deal with the coal deposits in an equally exhaustive manner. The magnetic and oligistic ores are of no great importance in France for supplying smelting works, but their locality was carefully pointed out. The red hematite deposits of the Ardèche, the carbonated ores of the Aveyron and the Gard, the spathic iron worked in the department of the Isére, the brown fibrous hematites long worked in the Perigord district, department of the Charente and the Dordogne, and the oolitic ares of Lorraine and the Upper Moselle were in turn referred to, and very interesting particulars given with regard to each.

The ores (he continued) which made the fortunes of the ironmasters of former days in the Franche Comté and Berry, when charcoal was generally used, are those known as pisolitic ores. These ores, which are granular, the grains varying from the size of a pin's head to that of a hazel-nut, are obtained by buddling and diluting in the water of mine clay procured in the irregular recesses or cavities situate either in the Neocomian calc or in the Upper Oxfordean calc. These granular ores have a yield varying from 30 to 45 per cent.; the weight per square metre also varying from 1650 to 200 kilogrammes. The gangue is silicious, or bituminous, or calcareous. They contain only traces of phosphorus, but they are not applicable to the iron manufacture, although they furnish the celebrated so-called *fer au bois* of Berry and Franche Comté. Similar ores were also worked in the old province of Champagne. They occur in pockets, and are called "rock mine," and the iron they produce "rock iron." They are not worked now to the same extent as formerly, the cost being too great. Other and more valuable Champagne ores are worked at the base of the neocomian soil in heaps intercalated in the sandy deposits. These ores are in the form of geodic flat beads, called in the locality *mine demi-roche* (semi-rock mine). They are of superior quality to that of the milliolithic ores, and less phosphoretic, and are in request for forge pig; they are worked up at Hervilliers (Meuse) and Ancerville, yielding 33 per cent. at the washing and 38 to 42 per cent. at the smelting for the works at Troveray, &c. At the works at Chatonrupt, in the Haute Marne Department, the yield is 40 per cent. at the washing and 42 per cent. as the blast-furnace after being washed, the ore being supplied at Moraucourt and Nomécourt for the works in the Blaise and Marne Valleys. At Surbée the yield is half at the washings and 40 per cent. at the blast-furnace, and the ore is supplied to the works at Eurville, Bettancourt, Guindrecourt, &c.

Finally, mines are also worked in Champagne, in beds situate in the clays of the upper neocomian formation, producing milliolithic ores in the form of grains of the size of millet seeds, embedded in a ferruginous clay, which is pounded and often washed. They are of inferior quality to those just described, but the mines can be worked very cheaply, generally in the open, and the net cost is inconsiderable.

ON THE MOST RECENT ADVANCES IN THE MANUFACTURE OF IRON AND STEEL.

BY PROF. RICHARD AKERMAN, OF STOCKHOLM.

The author alluded to the reluctance displayed ten years ago by ironmasters to open their works to strangers, and credited the Institute with the change that had been brought about. He eulogised the Bessemer, Siemens-Martin, and some other processes, and referred specially to the numerous Bessemer steel exhibits at the Paris Exhibition. He pointed out that the supply of ferro-manganese had led to a new method being employed for utilising old worn out rails, rich in phosphorus, begun at Terrenoire in 1874. For by the help of ferro-manganese they could at Terrenoire produce a final product so poor in carbon that the injurious influence of phosphorus upon it became much less than it otherwise would have been. Prof. Akerman speaks highly of the machine-puddled iron exhibited by Messrs. Hopkins, Gilkes, and Co., of Middlesborough. With regard to crucible melted tool steel the Exhibition has, he thinks, nothing properly new to offer under this head, if we do not consider chrome steel as such. The action of chrome is exceedingly advantageous, and much resembles, but is believed to be still more powerful than, that of tungsten. The paper altogether contains much useful information.

PONSARD'S FORNO-CONVERTISSEUR FOR THE MANUFACTURE OF STEEL.

BY J. SYLVAIN PERISSE, OF PARIS.

This peculiarly named instrument is composed of a gas furnace heated to a high temperature, the moveable hearth of which is supplied with a system of tuyeres, and so disposed as to enable one during part of the operation to work by both blast and intermolecular combustion, as in the Bessemer system, while maintaining the bath or molten mass under the influence of the high temperature produced by the external source of heat. The blast is stopped by a partial rotation of the apparatus, which causes the tuyeres to be disconnected from the molten metal, and the process is then carried on under the some conditions as the ordinary process of manufacture on the hearth. Mr. Périssé thinks the new apparatus is calculated to hold a distinguished place in the iron manufacture when it shall have received the sanction of practical application.

ON THE MECHANICAL AND OTHER PROPERTIES OF IRON AND MILD STEEL.

BY DANIEL ADAMSON, C.E., OF DUKINFIELD.

In this paper the author described numerous experiments conducted by eminent engineers to prove the tensile strength of iron and steel, both in bars and plates. Mr. Adamson has sought to ascertain the endurance of iron and steel when subject to concussive force, such as can be produced by guncotton, gunpowder, or other explosive materials. This is done partly with a view to understand what would be the effect of a steam-boiler working under pressure by the side of an exploding boiler, or the effect on a ship by collision with another, and whether wrought-iron or steel possessed the greatest power to resist such accidentally produced force. All the iron plates subject to the explosive test were 18 in. square and 7 16th in. thick. At 12 in. above the plate 3 lbs. of guncotton were fixed by a tripod of laths attached to the cotton by two india-rubber rings. Again, upon this was placed 2 ozs. of dry guncotton, with a time fuse attached, to ensure a complete explosion of the damp compressed cotton. On the guncotton exploding the iron plate was entirely broken through 10 in. in diameter, and the centre piece forced down to the bottom of the anvil block, breaking up in an irregular line in the direction, and to some extent across it. The same experiment was made with a ¾-in. steel boiler-plate; after explosion, weights and arrangements as before, the plate was depressed 3 in. into the recess of the anvil blocks without the slightest sign of fracture or any injury whatever. These experiments were repeated with the same result on five more best-best iron and five mild steel plates, the latter being both of the Bessemer and Martin Siemens system of manufacture. So far these experiments were conclusive in favour of mild steel to resist violent concussive force. The mild steel shows powers of resisting concussive force probably unequalled by any other metal that has ever been manufactured.

ON THE ELIMINATION OF PHOSPHORUS IN THE BESSEMER CONVERTER.

BY SIDNEY G. THOMAS, F.C.S., AND P. C. GILCHRIST, A.R.S.M.

It is generally believed that the retention of phosphorus by Bessemer metal is due to the intensity of the temperature and the short duration of the operation, but the authors formed the opinion that it is to the silicious lining of the ordinary converter and to the consequent necessarily silicious character of the slag that the one defect of the Bessemer process is due. Preliminary experimental tests having been encouraging, trials at Blaenavon on a larger scale were made. With a lining one part fire-clay and two parts ganister and pig-iron, containing 1·44 per cent. of phosphorus, the blown metal contained 1·63 per cent. of phosphorus, but by adding lime, the same lining being used, before the pig was run in, though the lining wore away very much, as might be expected, there was a decided decrease of phosphorus in the blown metal—the 1·44 in the pig being reduced to 1·23 and 1·07 in the blown metal. It is obvious that without a sufficiently durable as well as refractory basic lining the simultaneous dephosphorisation and conversion of cheap pig in the Bessemer vessel cannot rank as a commercial process. Lime and limestone do not constitute a satisfactory lining material; magnesia, as suggested by Caron and others, is too expensive, and when used alone too tender; but they believe to have discovered a remedy in the use of bricks formed of certain aluminous magnesian limestones and equivalent combinations. For bottoms, tuyeres, and many other purposes magnesian limestone mixed with silicate of soda solution forms an excellent material. The theory here advanced applies equally to the Siemens and other open hearth processes, where, in fact, many difficulties met with in the converter are absent. The authors wish metallurgists to reconsider the verdict so fatal to the hopes of steel makers that "oxygen, whether in its free state or as oxide of iron, is almost entirely inert as regards phosphorus at the intense temperature which accompanies the Bessemer process."

THE LOWE-STRONG WATER-GAS PROCESSES.

BY R. P. ROTHWELL, OF NEW YORK.

This was a paper referring to a process which has already been fully described in the *Mining Journal*. The gas is calculated to possess the high calorific power of 8798 units, as compared with 1101 units, the heating power of Siemens gas. The especial advantages of the strong gas for use in metallurgy are claimed to be, apart from the question of economy, the high and easily regulated temperature it affords and the relatively small volume of products of combustion compared with the heating effect. It is, in fact, the most concentrated form of gaseous fuel hitherto attainable for this application.

THE IRON AND STEEL INSTITUTE.

The excursions to three of the principal ironworks of France commenced on Wednesday, when a number of gentlemen left for St. Etienne to visit the works of Terre Noire. On Thursday another party left Paris to visit the ironworks and collieries of MM. de Wendel at Hayange and Stiring-Wendel. On Friday a third party —and by far the largest—left Paris for the works of Messrs. Schneider at Creusot in a special train provided by Messrs. Schneider. All of these establishments possess a leading interest for those engaged in the production of iron and steel, and of these splendid works I have now to send you particulars. Chief among the works are those of Le Creusot, which possess a special interest in reference to their history and their resources. Of Creusot, therefore, I shall first write. This magnificent establishment is situated about 250 miles to the south-east of Paris, in the arrondissement of Autun, and the various works taken altogether form a most interesting instance of what can be accomplished by patient industry and systematic organisation. Not that the other two ironworks visited lack interest in this respect, as I shall show hereafter, but Le Creusot stands particularly prominent in this connection. Situated in a district possessing moderate deposits of coal of an inferior character, a meagre clay ironstone, having only a scanty population, and without possessing the advantage of natural means of communication, an establishment has been reared chiefly through the genius of the late M. E. Schneider, representing an annual production of 190,000 tons of iron and steel wrought into rails, plates, forgings, and finished engines. The modern town of Creusot, which contains about 23,000 inhabitants, has grown to its present proportions upon a site which in the middle of last century was occupied by a small hamlet only, known as Charbonnière. It is situated in the midst of the mountains which separate the basin of the Saône from that of Arroux. For many years the inhabitants of this hamlet supplied their domestic requirements with coal found in their immediate neighbourhood. No attempt, however, was made to utilise the coal for commercial or manufacturing purposes until 1769, when M.F. de la Chaise obtained a concession. Three years later a company, in which Louis XVI. was interested, established a foundry for the manufacture of cannon at Creusot. There were, however, no adequate means of transport, which was a considerable drawback to the success of the enterprise. This led to the construction of canals in that district, with the view of developing the resources of that portion of France. In time the Canal of Charollois—now known as the Canal du Centre—was opened, but it does not appear to have greatly aided in the development of Le Creusot, inasmuch as the works only produced a few bronze and iron cannon and projectiles for the Government. In 1818 Creusot passed into the hands of MM. Chagot, who purchased the works for the sum of 900,000 f. The new owners, however, failed to make it a success, and after striving against fate for eight years they passed the property over to an English proprietary on Jan. 12, 1826. The new-comers were known as the Société Manby Wilson et Cie., who were already the owners of the works of Charenton. This company endeavoured to accommodate French systems and appliances to the more advanced and methodical knowledge acquired in England. The task, however, was a difficult one, and the proprietary met not only with opposition from within, but with obstacles to the sale of their products from without, and the result was another collapse, which occurred in June, 1833. At this juncture yet other proprietors came forward in the persons of MM. Coste and Chagot, who took the works over, and in December, 1836, sold them again to MM. Schneider et Cie. for 2,680,000 f. A new and unwonted energy soon pervaded the place, for the Messrs. Schneider at once undertook the erection of works suitable for the manufacture of locomotives and marine engines, and in 1838 they had the satisfaction of turning out their first locomotive engine, which was shortly afterwards followed by their first marine engine.

The nature and extent of the works at this period of their history are very clearly indicated in the report of the jury of the Saône-et-Loire for the Exhibition of 1839. From that document it appears that Creusot then comprised four blast-furnaces with accessories, all in work, a forge in which the six original furnaces had been augmented to 50 and a coal mine worked by the aid of a steam-engine of 250-horse power. A railway 10 kilometres in length connected the works with the Canal of the Centre, and the production of iron from the blast-furnaces was about 600,000 kilogrammes per annum—14 locomotives had then been constructed, and a 15th, which had been built for the Basle and Strasbourg Railway, was shown at the Exhibition referred to. A few years later witnessed another marked advance in the productive powers of Creusot by reason of the introduction of the steam hammer there by MM. Schneider, which enabled the firm to undertake far heavier contracts than previously. The invention of the steam hammer is in France attributed to M. Bourdon, who was the engineer to the Creusot works at the period to which I am now referring. In England we recognise no claim but that of Nasmyth in this connection. It would appear, however, that MM. Schneider took out a patent for M. Bourdon's invention on April 19, 1842, while Nasmyth did not take out his patent in England until June in the same year. But to whomsoever the merit of first invention belongs the fact remains that one of the first steam hammers made was working at Creusot soon after this date, and by its aid the proprietors were enabled to fit up the Labrador, the Canada, the Orenoque, the Albatross, and other vessels engaged in the Mediterranean trade. The Crimean War taxed to the utmost the resources of the Creusot works in 1855, when great demands were made upon them for war *matériel*. At that time the forge consisted of 60 puddling furnaces and 35 re-heating furnaces, based on a productive capacity of about 150,000 tons of iron per annum. But MM. Schneider saw the way to further developments, and undertook the entire reconstruction of this department. In 1869 works on a very extensive scale were erected for the manufacture of Bessemer steel, and at the present time the establishment comprises ironstone and coal mines, blast-furnaces, steel works, a large forge, engineering shops, foundries, brick works, and a complete system of railways.

To describe each of these works even generally would require time and space far greater than is at command at present, so that I shall best consult convenience by giving a general notion of the vast establishment at Creusot. First, then, the mines from which the supplies of ironstone are obtained, and of which MM. Schneider own in France five distinct groups. They are respectively those of Mazenay, Saône-et-Loire; Laissey Doubs; Allevard, Isére; St. George, Savoie; and St. Florent, Cher. The mines of Mazenay are situated about 22 miles from Creusot, with which they are connected by a private railway, and their annual production is about 250,000 tons, the number of workmen employed there being 650. The total number of hands employed in the five groups of ironstone mines is 1921, while the total annual production of ore is about 400,000 tons. In addition to this MM. Schneider use ore from Berry and from the Alps, besides supplies drawn from mines owned by them in Spain and Africa. Their collieries are those of Creusot, Montchanin, and Longpendu (Saône-et-Loire), La Machine, near Decize, Niévre; and Montaud-St.-Etienne, Loire. The collieries at Creusot produce 190,000 tons of coal per annum, and give employment to 1200 workmen. There are also 20 engines of various kinds, with an aggregate of 900-horse power, for working the seven pits, which are about 800 ft. deep. The total production of coal in all the collieries belonging to MM. Schneider for the year 1877-78 is returned at 549,000 tons, while the consumption for the same period has been 572,000 tons of coal and 165,000 tons of coke.

Turning to the iron-producing plant and machinery at Creusot there are first the blast furnaces in which the iron ore is reduced and the pig-iron made. Of these there are 13, in two rows of nine and four each, and they are capable of producing 190,000 tons of pig-iron per annum. Some of the furnaces are 75 ft. high, while others are 10 ft. shorter, and in each case the blast is heated by Whitwell-Cowper stoves. The furnaces are blown by three groups of engines—nine in all—of 1600 horse power collectively. In this department there are also 11 smaller engines of 300-horse power collectively. The coke used in the furnaces is made on the works in 194 ordinary horizontal ovens and 234 Appolt ovens, which have vertical chambers and are a newer type of oven. The waste gases from the blast furnaces are utilised under the boilers for raising steam for the blowing and other engines. Three kinds of iron are produced—namely, forge iron, foundry iron, and Bessemer pig-iron. The total number of men employed in connection with the coking ovens and the blast furnaces is 780. The products of the blast furnaces are taken to the rolling-mill and forge department for conversion into wrought iron, At Creusot this department occupies a site of 30 acres, and includes 98 puddling furnaces, 60 re-heating furnaces, 18 steam hammers, and 54 trains of rolls of various kinds for the production of plates, bars, and rod iron. Among the puddling furnaces are two on the rotating principle, which have water jackets on Mr. Crampton's well-known system. They were put up about two years since, and have withstood the effects of constant work splendidly. The power required to drive the machinery in this department consists of 15 steam-engines, representing an aggregate of 4250-horse power, besides which there are six steam pumps of 50-horse power total The forgoing comprises what is termed *la grande forge*, and includes a large open court, five distinct buildings for various purposes, two puddling forges, and rail mills.

One of the most prominent features in connection with this department at Creusot is a magnificent steam hammer, which has lately been made and erected there by MM. Schneider. It has a power of 80 tons weight, falling through a space of 16 ft. 6 in. A model of this enormous machine, which is by far the most powerful tool of its class in existence, is placed in front of the pavilion of the Creusot works at the Paris Exhibition, and its colossal proportions attract general attention. The height from the bottom of the foundation to the top of the steam hammer is 112 ft., while the height of that portion of the hammer above ground level is 62 ft. The diameter of the cylinder is 6 ft. 6 in., and the length of stroke 16 ft. 6 in. The total weight of the substructure, or that portion of the hammer which is below ground and includes the anvil and block, is 750 tons, while the total weight of the superstructure, or that portion which is visible above ground level, is 530 tons, giving a total weight of 1280 tons. The foundations are of masonry, resting on rock at a point 36 ft. 6 in. below the ground level. In connection with this hammer are two cranes, capable of dealing with masses of 100 and 160 tons respectively, besides special re-heating furnaces and other accessories. The total cost of this heavy plant has been about 120,000*l*., but the outlay and consequent acquisition of such powerful plant and machinery place MM. Schneider above all competitors in France or elsewhere—at least for the present.

The remaining works at Creusot consist of the steel-making department and the engineering shops. The steel-works embrace both the Bessemer and the Martin-Siemens systems, there being three groups of Bessemer converters and six furnaces on the Martin-Siemens principle, The blowing is effected by a couple of engines of 1300 horse power collectively, and the annual production of steel is about 80,000 tons, in the manufacture of which 500 men are employed. The engineering shops are situated to the rearward of the blast furnaces, and beyond them rise the mountains, which form a background. These shops are the largest of their kind in France, and occupy an area of ground 1500 ft. in length by 500 ft. in depth. They consist of a foundry, a forge, and an erecting shop, besides other necessary adjuncts. In this department are 32 steam engines having an aggregate of 700 horse power, 28 steam hammers, and 650 machines of all kinds, including lathes, planing, slotting, morticing, drilling, and other machines, while about 2500 hands are engaged in using them. The work turned out here consists of locomotive and marine engines, and various other machines, besides bridges and roofs, and the value of the annual production, excepting locomotives, is placed at 8,500,000 f. About 100 locomotives are turned out each year.

To summarise the matter, which will enable the extent of the works at Creusot to be readily comprehended, I may state that the area covered by the buildings, depôts, railways, and workmen's houses and gardens is 1031 acres, while the estates and forests belonging to MM. Schneider occupy 1800 acres more, giving a total area of 2831 acres. The total number of workmen at present employed is 15,252, distributed over the various mines, collieries, blast-furnace, and other departments, the railway service alone occupying about 1500 men. The firm are the owners of 27 locomotives and 1518 wagons, and they employ 281 stationary engines with an aggregate of 13,344 horse power, 58 steam hammers, and 1050 machines of various other kinds. Its productive powers are equal to an annual output of 700 000 tons of coal, 200,000 tons of pig iron, 160,000 tons of finished iron and steel, and 30,000 tons of engines and general machinery.

Such are the Creusot works, to and over which a large number of the members of the Iron and Steel Institute have recently been conducted by M. Henri Creusot, who continues the work of his father, and who upon the present occasion treated his guests with princely liberality, providing trains from Paris to the works and back, refreshments at the stations *en route*, and every accommodation during their stay at Creusot, including a sumptuous banquet at Dijon. They afford a remarkable instance of commercial success under MM. Schneider's management, and yet they depend in a great measure for their superior ores upon a supply from mines on the coast of Africa, to which I have already alluded, and for a portion of their fuel upon the South of France, while their produce has to pass over several hundred miles of railway before it reaches any harbour or important market of the world.

The second excursion arranged for and carried out by the members of the Iron and Steel Institute was that to the works of the Compagnie des Fonderies et Forges de Terre Noire, La Voulte et Bességes. A considerable number of the members accepted the invitation of the company, and left Paris on Wednesday for St. Etienne, which is about 200 miles to the south of Paris. The Terre Noire Works are about four miles from St. Etienne, and with those of La Voulte and Bességes, form the second largest establishment of their kind in France. Not upon this account alone is their claim to the notice of metallurgists based. Of late years they have really been the centre whence have radiated numerous metallurgical discoveries and improvements, with many of which the name of M. J. Euverte, the talented manager of the works at Terre Noire, is inseparably connected. The works were originated in 1819, and were established under a Royal decree bearing date Nov. 13, 1822. From that time to the year 1839 the interests now represented by the works at Terre Noire and Bességes were vested in the Compagnie des Fonderies et Forges de la Loire et d'Isère. In the latter year, however, they changed hands, and for twenty years subsequently the works were carried on by the Compagnie de la Loire et l'Ardèche. In 1869 another change in the proprietary occurred, which resulted in the concern being invested in the present company. In the first instance—that is in 1819—the only object in view was the working of the iron mines of La Voulte, but soon afterwards the original promoters of the company, M.M. Frèrejean Pèro Fils et Cie, acquired a site at Terre Noire for the erection of blast-furnaces and a forge. In 1822 the forge was built and set to work, and in the following year two blast-furnaces, which, like the forge, were on

the English system, were erected near the forge by the Société des Mines de Fer, which was founded by M. de Gallois. The Compagnie de la Loire et d'Isère shortly after acquired these blast-furnaces, and extended their operations by constructing four more at La Voulte.

The works at Bességes were not founded until 1846, their originators being the Société des Hauts-Forneaux et Forges de Bességes, by whom they were worked until 1855. In that year they became incorporated in the second, or intermediate company, to which I have alluded. Nine years later, in 1864, the same company acquired some other furnaces at Bességes, which belonged to the Société Houillière de Robiac, together with the iron mines of Bességes, Travers, and Courry. Previously to that, however—in 1850—this enterprising company had acquired the works of Lorette and St. Julien, and in 1851 they made further additions to their property by the purchase of the works of Pouzin, with two blast-furnaces, and of the iron mines of St. Priest. In 1862 the company acquired some other ironstone mines at Ailhon, and at the same time some coal mines were also purchased, including those of Lalle. As at present constituted, the Campagnie des Fonderies et Forges de Terre Noire, La Voulte et Bességes, embraces six distinct works—those of Terre Noire, St. Julien, Lorette, La Voulte, Le Pouzin, and Bességes. The company owns also the collieries of Reroux, Janon, Lalle, and Côte-Thiollière, and the iron mines of La Voulte, Lac, St. Priest, Ailhon, and Bességes. The various concerns embraced within its jurisdiction, taken together, constitute one of the largest commercial and industrial interests of France.

The most important of these various groups of works is that selected for the visit near St. Etienne, and of which Terre Noire constitutes the centre. This is denominated the group of the Loire, and it comprises the blast-furnaces and forges of Terre Noire, the smaller forge of Lorette, and both Bessemer and Martin-Siemens Steelworks. In the immediate vicinity of these works are the collieries of Reroux and Janon. There are three blast-furnaces at Terre Noire heated by Cowper-Siemens stoves, and blown by a pair of blowing engines of 280-horse power collectively. These furnaces are only used for the production of Bessemer iron and spiegeleisen, of which the natural yield is about 30,000 tons. The forge here contains 23 puddling and 19 re-heating furnaces, with four steam-hammers, two forge trains, and seven rolling mills. This machinery is driven by 39 engines, representing a total of 1600-horse power. The Bessemer Steelworks have been put up close to the blast-furnaces, so that the pigs are carried direct from the furnaces to the converters. There are four converters, each capable of treating a charge of about 5 tons of pig-iron per blow, and giving a collective yield of 27,000 metrical tons of ingots per annum. The Martin-Siemens steel plant consists of nine gas furneces with their gas generators, and a similar number of re-heating furnaces. Their combined yield is 22,500 metrical tons of steel per annum. In the foundry and adjoining workshops four steam-engines are employed, representing a total of 55-horse power. Here the process of casting steel without blow-holes is extensively carried on. The process has been perfected by using a silicide of manganese and iron, which gives to the product remarkable qualities. The silicon prevents blow-holes by decomposing the oxide of carbon which is in dissolution, and tends to escape during solidification. The manganese reduces the oxide of iron, and prevents a further production of gases by the reaction of the oxide on the carbon. The production of projectiles and various other castings in this valuable metal goes on at the rate of 1500 metrical tons per annum.

Not far from Terre Noire is the small forge of Lorette, which comprises ten puddling furnaces and nine re-heating furnaces, with a steam-hammer and five forge trains. The produce here is about 2000 tons of plates per annum. The colliery of Leroux, in the same district, has three pits, employing seven steam-engines for drawing the coal and for other purposes, and yielding about 32,000 tons of coal per annum. The neighbouring colliery of Janon has two pits and a drift, and yields about 19,000 tons of coal per annum. The aggregate area of the works in the district of the Loire is about 46,000 square yards, the number of hands employed there being 2200, and the number of engines 391, having an aggregate of 2377-horse power.

The group of works situated in the district of the Ardèche has La Voulte for its centre, and embraces ironstone mines and blast-furnaces. The mines are worked both by shafts and drifts, and produce about 160,000 tons of iron ore per annum. The blast-furnaces at Pouzin are two in number, and produce about 20,000 tons of white iron per annum. At La Voulte there is a foundry which yields about 16,000 tons of finished castings per annum. At the same place is a block of four blast-furnaces, three of which only are at work at present, from which 22,000 tons of ordinary white iron and 16,000 tons of grey iron are turned out annually. At Privas are the mines of St. Lac and of St. Priest, which are connected with the Mediterranean Railway by a branch line. They have nine pits, worked by four steam-engines, the yield being about 50,000 tons per annum.

The group of works in the Gard district is situated in the neighbourhood of Bességes, and embraces the iron mines of Rochoule and of Travers, the collieries of Halle, the blast-furnaces, foundries, forges, and steelworks of Bességes, and the blast-furnaces, forges, and steelworks of Alais. From the iron mines of Travers and Rochoule about 30,000 tons of ore are annually extracted, while at Alais the annual yield is 45,000 tons. The collieries at Halle yield about 55,000 tons of coal per annum, and are worked by three pits and a few drifts. At Bességes are 89 coke ovens, constructed on Carve's system, where 38,000 tons of coke are annually produced from coal raised at Halle. At Alais there are six blast-furnaces, yielding about 35,000 tons of pig-iron per annum. The forges at Alais have 33 puddling and 15 re-heating furnaces, five steam hammers, and seven trains, yielding about 16,500 tons of finished metal per annum. The Martin-Siemens steelworks here are small, and only consist of two ordinary Siemens gas furnaces and two re-heating furnaces, representing a total annual production of 6000 tons of ingots. The foundry at Alais yields 2500 tons of castings per annum. At Bességes there are four blast-furnaces, producing annually 40,000 tons of grey iron, Bessemer pig, and spiegeleisen. The forges here comprise 18 puddling and 12 re-heating furnaces, two shingling hammers, and seven trains, producing 40,000 tons of finished metal per annum. The Bessemer process is carried on with four converters, each being equal to the treatment of 5 tons of metal per blow, and giving an aggregate annual production of 25,000 tons of ingots. The Martin-Siemens process is carried on at Bességes by the aid of four ordinary Siemens gas furnaces, and two re-heating furnaces, with five gas generators, the annual aggregate yield being about 12,000 tons of ingots. The foundries here produce annually about 7000 tons of castings.

It will thus be seen that the works of the Terre Noire Company, although individually of comparatively small capacity, are very numerous, and thus form in the aggregate a really vast industrial establishment of considerable importance. Its extent will be more readily realised if I append a summary of the works already detailed and of the staff by which the industry is maintained. There are in all 19 blast-furnaces, of which, however, eight are at present out of blast. Their are 8 Bessemer converters, 15 Martin-Siemens furnaces, 84 puddling-furnaces, 55 re-heating furnaces, 28 trains of all kinds, and 12 steam-hammers. To drive these machines 143 steam-engines are employed, having an aggregate of 8505-horse power. The area covered by the company's works is equal to about 116,789 square metres, while they possess nearly ten miles of railway. The workmen number 7442, while to keep the concern going a staff of 439 managers and clerks are employed. The output of iron ore from the company's mines in 1867 was 160,000 tons, while in 1877 it had reached 200,000 tons, showing considerable progress. In like manner the production of pig-iron in 1867 was 94,000 tons, which had increased to 158,000 tons in 1877. So with the finished iron and steel, which from 74,500 tons in 1867 had risen to 147,000 tons in 1877. It is thus, and also on account of the high scientific developments which have been attained at Terre Noire, that these works take a leading position among the industrial iron centres of France. No pains were spared on the part of the representatives of the company to render the visit of the members of the Iron and Steel Institute agreeable and instructive, and those who were present carried away with them several pleasant reminiscences of the excursion to Terre Noire.—*Times.*

THE HAYDOCK COLLIERY EXPLOSION.

CHARGE OF INCOMPETENCY AGAINST THE MANAGER.

At Liverpool on Tuesday an enquiry into the mode of ventilation adopted at the Haydock Colliery, in the pit in which the shocking explosion of June 7 occurred, was opened before Mr. Raffles, stipendiary magistrate, with Mr. G. C. Greenwell, mining engineer, as assessor. The enquiry was instituted at the instance of the Home Secretary, and was under the Mines Regulation Act, 1872. Mr. Walton, barrister, appeared on behalf of the Home Office, and Mr. Leresche, barrister, represented John Turton, the manager of the mine, against whom a serious charge of incompetency was preferred. In opening the proceedings Mr. Walton recited the charge: It was—1. That the supply of air sent into the workings of the pit was far below the amount required for the wants of the men (200 in number) employed in it.—2. That the supply of air had to travel too great a distance, and that it encountered so much friction as to weaken the ventilation.—3. That the system in vogue in the mine of sending the air in its early course past goaves (or worked-out spaces giving off gas) was calculated to convey gas to the men to whom it was afterwards sent, and so was a faulty system of ventilation.—4. That too many working places were kept going for the thorough ventilation of them all, while some had been taken forward too far in advance of others. The charge proceeded to state that on the date of the said explosion, from the causes mentioned and other causes, an adequate amount of ventilation was not constantly produced in the mine to dilute and render harmless noxious gases to such an extent that the working places, &c., were in a fit state for working and passing therein; and that, in consequence, of these allegations and reasons, or some of them, John Turton was, by reason of incompetency and gross negligence, unfit to discharge his duties as manager of the mine.

Mr. Walton, in the course of his opening, said he would support the above charges by the evidence of Her Majesty's Inspectors. He added that the mistake made by the defendant was in not having more "splits" in the ventilation. The intricacy and extent of the workings were too great for one column of ventilating air alone, the distance travelled being as much as 4300 yards. The mine should have been ventilated in districts by several currents of air, and the foul air from the goaves should never have been taken through the workings at all. He also alleged that the quantity of air sent down into the mine (28,000 cubic feet per minute) was insufficient for 200 men, and pointed out that in other mines in the district 75,800 or 80,000 cubic feet were sent down for the same number of men. He gave the defendant credit for brave and admirable conduct after the explosion, but said the question remained—Was the system of ventilation what it ought to have been? When they remembered the thousands of lives dependent on the safety of mines it would be agreed that doubts having arisen as to the mine in question there was no other course open to the Home Office than to take measures to have an investigation. After some minor witnesses, Mr. J. L. Hedley, assistant Government Inspector for West Lancashire and North Wales, was examined, and gave evidence in support of the case opened by Mr. Walton. He strongly disapproved of the ventilation by means of one current of air, in view of the distance the air had to travel, the amount of bratticing, which was always dangerous, and the passing of the air through the goaves, where it became impregnated with gas before reaching the men. The ventilation should have been split up, by which means double the quantity of air would have been passed through the mine.

The hearing of the case was continued on Wednesday, when the cross-examination of Mr. Hedley was continued. He adhered to his opinion that the ventilation was insufficient, and in reply to the magisgrate, said he knew of no other mine of such size where there was only one air current. This mine should have had three. In small mines, employing only 20, 30, or 40 men, there were often only one current of air.—Mr. Joseph Dickinson, Her Majesty's Senior Chief Inspector of Mines, was next examined, and gave evidence strongly condemnatory of the ventilation of the pit. The radical defect was in sending the air past the goaves first, and then on to the working places, so that it carried the foul air on to the men; then the quantity of air was insufficient, and there were, too, great lengths of bratticing. These defects would render an explosion possible, and even probable, at any time without any extraordinary cause, such as a great outburst of gas. Such a mode of ventilation was opposed to the system universally followed by mining engineers. In cross-examination the witness was pressed by Mr. Leresche as to whether, apart from the question of the system of ventilation, and admitting it to be defective, he had observed any incompetence or negligence on the part of the defendant. He said he had not, but that Mr. Turton (who had been 33 years man and boy in the pit) was a thoroughly competent and practical man. Cross-examined by Mr. Leresche, Mr. Dickinson said: I have known Mr. Chadwick as a mining engineer for over twenty years. He has always been regarded as one of the foremost engineers. I would have been more satisfied with him if he had put John Turton right in the laying out of this mine. It was, in my opinion, his special duty. Mr. Dickinson admitted that, apart from the system of ventilation, the defendant was a practical man, and entirely blameless in the performance of his duties. The Magistrate intimated that the view of the case he took was that if the Court found that the evidence showed Turton to be a competent man, and not to have been guilty of any gross negligence or incompetence, they would not have the power to suspend his certificate, whatever they might think of the system of ventilation. Mr. Leresche said that would be his argument.

In reply to the Magistrate, the witness said that the reason that no Government Inspector had warned the proprietors of the mine of the objectionable ventilation was that the Inspectors had very hard districts, and could not know the circumstances that went on at every mine.—The Magistrate: Then it comes to this, that there are not enough inspectors to bring the whole number of mines under their observation?—The Witness: If you wish the inspectors to do that you must increase their numbers very largely.—Mr. William Pickard, Miners' Association agent for the Wigan district, was next examined, and agreed with the previous witnesses in disapproving of the ventilation arrangements at the mine, and for the same reason.

Cross-examined by Mr. Leresche, Mr. Pickard said he had formed a very high opinion of Mr. Turton's competence as a practical man from his acquaintance with him since the explosion, and he wished there were more of such men filling similar positions. He entertained so high an opinion of Mr. Turton's conduct after the explosion that he was prepared to recommend him for the Albert Medal for saving life. He never heard any man complain that anything was wrong. Mr. Hall, Her Majesty's Inspector for West Lancashire and North Wales, gave similar evidence. This was the case for the Home Office.—Mr. Leresche submitted that there was no case against the defendant, who merely carried out a system approved by his superiors, and against whom there was not the slightest complaint.—The magistrate expressed his opinion that the Act must be interpreted to mean that the defendant could not be responsible to the extent of losing his certificate except "gross negligence and incompetence" were proved against him. Instead of this it was admitted that he administered the system of ventilation, bad though it may be, without any fault.—Mr. Walton said that the Act made the certificated manager responsible, and urged that the continuance of the defective ventilation was *prima facie* a proof of gross negligence on the part of the defendant within the meaning of the Act.—Mr. Raffles said he thought there was no evidence before the Court to induce them to think that Mr. Turton was an incompetent man, or guilty of gross neglect; but, seeing the Home Secretary had deputed them to enquire into the matter, it would perhaps be more satisfactory to have the evidence of Mr. Chadwick, Mr. Turton, and Mr. Glover. As to anything beyond that he did not know that it would be necessary. The enquiry was then adjourned.

The enquiry was resumed on Thursday, when Mr. Benj. Glover, Mining Engineer, was examined by Mr. Leresche. He had known the Haydock Collieries for about 17 years, and Messrs. Evans had always conducted them in a very superior manner, no expense being spared. He had made frequent underground examinations and surveys of the Wood Pit, and had very often been brought into contact with Mr. Turton. He considered him a very steady, careful, and painstaking man in his work, a thoroughly practical man, and one of intelligence and resource. Witness was of opinion that the workmen under the defendant's charge were well and satisfactorily managed. He would not call the Higher Florida a gassy mine. He had never seen gas in the South Florida Mine before the explosion, nor had he had any complaint made to him of gas being there. The last time he visited the mine before the accident was about the middle of March, when he was down for three or four days consecutively. It was then in good order, and the ventilation appeared to be ample. In the January before that he took Mr. Lee's son and Lord Vernon's son to visit the mine as one of the safest on the estate. Since the explosion he had visited the pit several times, and assisted in the explorations. The opinion as to the cause of the explosion which he gave at the inquest had since been confirmed by the cutting to the blower, the state of the floor, and the appearance at the sides. He did not think there would have been any warning of this blower before the explosion. It must have been a sudden outburst, and very severe, as was shown by the state of the floor, which was upheaved at the point where the gas broke out. In his judgment the accident was due exclusively to the sudden and violent outburst of gas, which would explode as soon as it became diluted with the requisite amount of common air. It would only explode, of course, if brought in contact with a flame, and he thought the explosion was due either to a defective lamp or to the colliers, when they heard the blower, rushing out from their places, and the fresh air might cause the flame in the lamps to pass the gauze. From the position of the bodies, he believed that the gas was ignited by one of the six men in Holmes level, as their bodies were the only ones found outside their places, the other men having been killed at work. With respect to the ventilation, he considered that the amount of air shown to have been sent down—31,775 cubic feet per minute—was quite sufficient to ventilate the South Florida Mine, having regard to the extent of the workings and the number of men employed there. He knew of several cases in the Haydock district where the air columns were larger than in the Florida Mine. On the 22nd of the present month witness tested the ventilation at Dearden's jigger, and found 38,812 cubic feet per minute passing along in one column 3135 yards long. When the passage into Dearden's level was opened, allowing the air to go that way as well, the quantity rose to 41,168 cubic feet per minute, but the effect of this was to reduce the air passage through Evan's place from 23,607 to 13,419 cubic feet. In reply to Mr. Raffles, witness said that Mr. Turton consulted with Mr. Chadwick, the resident mining engineer, as to the ventilation of the mine.

Mr. Chadwick, resident engineer of the Haydock Colliery, was next called. The general plan of ventilation of the Florida Mine had been carried out on his recommendation and under his supervision and direction, the details of working being left to Mr. Turton. The whole of the workings in this mine were of a tentative character, as the ground was new, there being no other workings in the immediate neighbourhood. He was quite satisfied with the manner in which Mr. Turton did the work. He was thoroughly competent and careful—none more so—and during the seven years he had been manager of this mine not a single life had been lost in it from any cause whatever. Witness himself had had 35 years' experience as a mining engineer, and for the last 25 years he had been connected with the Haydock Colliery. The ventilation up to the time of the explosion was quite sufficient. He did not think the system would have been improved if the air had been split up as had been suggested. Mr. Turton had the actual power to change the ventilation without consulting the witness, but he was sure he would never have done so. At the conclusion of Mr. Chadwick's evidence, Mr. Leresche said he did not think it necessary to call any more witnesses for the defence.—Mr. Raffles said the Court would make their report to the Home Secretary, and they returned Mr. Turton his certificate, the charge not having been proved.

WEST LANCASHIRE AND NORTH WALES MINES INSPECTION.

A copy of the following circular letter has been forwarded to each colliery manager within the West Lancashire and North Wales mines inspection district:—

SIR,—In consequence of several serious accidents which have occurred in this district, I desire to draw your attention to the necessity of greater care and precaution in the use and examination of safety lamps. "Davy" safety lamps should be provided with a proper shield to avoid as far as possible any danger of flame being forced through the gauze. When making the daily examination of safety lamps as required by No. 7, general rule, the gauze should be withdrawn from the frames of the lamp in every case, so that the examination may extend to every part; unless this is done such examination cannot be thorough and effective. If glass lamps are used the examiner should not pass any cracked or chipped glasses. The fireman of each district of the mine is the proper person to examine and securely lock all lamps before they are taken beyond the "lamp station." All such "lamp stations" should be distinctly indicated by a notice board with the words "lamp station" kept legibly printed on it. At collieries where it is the practice to examine and lock the lamps on the surface the duty should only be entrusted to an intelligent and careful man, and be thorough and complete, as already pointed out. All lamps should be numbered and constantly used by the same workman, the numbers being entered in a book against the owners' names. Where the lamps are the property of the workmen a small numbered "token" should be attached to each lamp and a record kept of these "tokens," with the object of readily identifying the owner of any lamp which has been tampered with. The ventilation should be frequently recorded in a book. I also take this opportunity of drawing your attention to the following matters:—

1.—That the fireman's reports under general rule No. 2 should distinctly state the condition of the mine, in addition to an expression of opinion as to its safety or otherwise.—2 That stemmers used under general rule 8 should, if possible, be made entirely of wood or of a combination of wood and copper. If iron, with a copper tip, is used, the tip should be at least six inches in length, and should be examined and stamped with the name of the colliery or other mark.—Note: Several fatal accidents have occurred recently through the workmen introducing and using iron stemmers with very short copper tips.—3. That under special rule 28 it is compulsory on the workmen to set sprags as soon as there is room in all cases, and to keep them set during holing; and a place being apparently quite safe is no excuse for their not being set.—4. That under the Elementary Education Act, 1876, all boys under the age of 14 years, and employed either underground or on the surface, must attend school in accordance with the bye-laws of the local school authority, unless they possess a certificate of previous due attendance at school, or certificate of proficiency, or unless they had attained the age of 11 before Jan 1, 1877.

HENRY HALL, H.M. Inspector of the District.

SAFETY-LAMP WITHOUT WICK.—The design of PAUL HAEDICKE, of Berlin, is intended to serve to manufacture lamps which by their use for lighting and heating purposes shall be free from all danger of explosion, and shall be provided with an incombustible guide collar (the working point of the flame). To effect this it is, therefore, necessary to keep the reservoir containing the liquid to be burnt at such a distance from the burner that neither a heating, much less a lighting, of the gases which may escape from it can take place. To obtain this object the reservoir has been made the bottom part of the lamp, serving by standing as foot, keeping, therefore, between it and the burner such a distance that a heating and of course much less a lighting of the gases is impossible, even when the escape is increased by filling the lamp while burning. Such a height cannot be reached with the wick used till now. The liquid to be burnt is, therefore, carried to the burner by means of a tube filled with asbestos (or plaster, clay, magnesia, silicious earth, sand, coal, powdered glass, glass woll, sponge, which all possess a greater aspirating power than the wick), which becomes at the top smaller, and carries a small interchangeable support or guide collar (formely called wick holder) of the same material. When round burners are used this tube is hollow (in section of annular shape), enlarged at its bottom. The inner tube passes through the bottom of the reservoir containing the liquid, and conveys the air from the bottom directly to the annular guide collar or support.

PUMPING APPARATUS.—The invention of Mr. H. B. VERCOE, M.E., of Holywell, Flintshire, relates to pumping apparatus for mines, wherein a bucket and a plunger ram move together, the ram in a case communicating with a barrel containing the bucket, so that as the bucket discharges during ths up stroke, and the plunger ram during the down stroke, a continuous discharge ensues. In the improved apparatus the bucket and the plunger each obtains its supply of water through a separate suction and valve. The pump stands on two perforated suction pipes (windbores) fixed in a cistern, into which water flows from the mine. In a double clack piece (or valve piece) are two clacks (or valves), one over each suction, and two

doors are provided, by opening which the clacks may be examined and changed. On one side of the clack piece is fixed the working barrel containing the pump bucket, which is suitably attached to the engine rods. On the other side of the clack piece is fixed the case containing the plunger ram; thus, the bucket is vertically over one clack or valve and suction, and the ram is vertically over the other clack or valve and suction. The ram is attached to the same engine rod as the bucket. On top of the barrel is a changing door piece with door, by opening which the bucket may be examined, and leather replaced when necessary.

Original Correspondence.

RICHMOND MINING COMPANY.

SIR,—At the present moment this mine would appear to be absorbing the attention of the public to a great extent, and now the storm has spent itself for bulls attempting to send shares up, and bears for making reckless statements to depreciate the same, a lull may be conducive for calm minds to arrive at facts relative to the property from the source whence these facts should be derived—the reports of the agent, Capt. Rickard. This gentleman was long in the service of Messrs. John Taylor and Son, of Queen-street-place, thoroughly understands his business, and was, I believe, highly esteemed by them. He certainly has the entire confidence of the intelligent portion of the shareholders in Richmond, and his very clear report in last week's Journal ought (if anything can do so) to give confidence as to the future of the mine. He plainly promises a long and profitable run when the furnaces are re-lighted.

Developments have been made in the mine quite warranting this assertion. The adjoining mine (the Eureka Consolidated) has during the last 12 months paid $3 per share per month—about 12s. 6d. per share per month; and the shares numbering 50,000, this equals about $1,800,000 annually, or nearly 400,000*l.*, distributed amongst the fortunate proprietary. It is not many years since I myself purchased this Eureka Mine from Mr. Bateman for 40,000*l.*, and I formed an English company with a capital of 60,000*l.* to work the same. The property was not to be taken over unless it had been approved by an English expert. The Welsh gentleman (supposed to be a competent miner) upon whose report the English shareholders determined to act recommended the company not to have the mine, and the project was therefore abandoned, although at the time a furnace was up at the mine in a good position to make large profits. In this way English investors lost the chance of participating for a small sum in this extraordinary mine, and certainly a sum of 2,000,000*l.* was thus lost to them.

Now, I do not expect that Richmond will pay as well as Eureka Consolidated, although there is really no reason why it should not, but if it even pays half as well as Eureka the Richmond shareholders will have no reason to complain, and it does seem a matter of regret that to certain minds success is much more painful than failure. I judge this to be so from the miserable correspondence with regard to Richmond which has lately disgraced the public press.—*Austinfriars, Sept.* 27.——— GEORGE BATTERS.

FLAGSTAFF MINING COMPANY.

SIR,—You published last week a letter by a "Debenture-Holder," in which are some statements that require correction. The letter is of a libellous nature, and my solicitor will write to you for the name of your correspondent. The writer makes his appearance a few days before the application to the Court for an order on the company to consent to Mr. Erwin Davis having the carriage of the appeal to the Supreme Court of the United States, upon the terms of his defraying the expense, and your correspondent would be glad if by partial statement of the facts, and by inuendos, he could influence debenture-holders to support Mr. Sykes and Mr. Snell in their advocacy of Mr. Davis's plans. The application was heard last Wednesday and refused. The game is to be renewed next week, and Mr. Sykes is already in the field with another circular to debenture-holders "who have supported him," he says 20 in number—that is, 20 out of 170, in value about 2000*l.* I have, without any explanatory circular, the support of more than treble the amount.

Your "Debenture-Holder" does not tell your readers that in whatever sum Mr. Billing may be indebted to me the company is indebted to him, and that whatever sum I advanced was advanced for the benefit of the company, and actually expended on their behalf. When Mr. Snell makes his application to the Chief Clerk for my removal he will find me prepared to prove that money transactions between Mr. Billing and myself have not been prejudicial to the interests of the debenture-holders, but the contrary. And, again, your correspondent should have explained while stating that I was sole trustee that the trusts of the mortgage are, by the decree recently given in the suits by Vincent and Snell *v.* the Company and Trustees, being administered by the Court itself, without whose sanction I can do nothing.

And let me add here that there was no "magnanimity" on the part of either Mr. Vincent or Mr. Snell, but that they acted under the advice of their counsel, and agreed "to withdraw all imputations against the trustees, and that the trusts should be administered by the Court," with which I was quite content, as it relieved me from responsibility, and protected me against suits by other debenture-holders. Mr. Snell can do nothing without leave of the Court, neither can the debenture-holders meet and elect trustees, as your correspondent ignorantly suggests.

The interests of the debenture-holders are being attended to now, as have been for a long time past, at my own personal cost, and I am at their service here, and prepared to give them information on any point any afternoon they may please to call on me.

6, *Great Winchester-street.* ——— E. PEARSON.

[For remainder of Original Correspondence see this day's Supplement.]

FLAGSTAFF MINING COMPANY.—In the case of Vincent *v.* the Flagstaff Mining Company, and Snell *v.* the same, which came before Mr. Justice Hawkins on Wednesday, Mr. Hemmins, Q.C., moved, on behalf of the debenture-holders of the company, for an order to compel the company to concur in an appeal to the Supreme Court of the United States against the decision of the Supreme Court of Utah, where the mine is situated, in an action brought by one Tarbet against the company. Under an Act of Congress, the American Government by letters patent granted certain mining land to the patentee, who sold the land to the company. The company dug out ore from under the soil granted, and also latterly from under the adjoining soil. Tarbet set up a right to the ore under the adloining land, but the case was decided against him. Then the management of the company was placed in other hands, and before the Utah Court Tarbet won his case and obtained a verdict for 40,000*l.* damages. The debenture holders now seek to compel the company to appeal against this decision, and failing that, to carry on the appeal in the name of the company, but at their own risk.—His Lordship refused the motion, on the ground that there was no evidence that the plaintiffs were debenture holders, and agreed to deal with the question of costs next week, when the motion will be renewed.

TASMANIAN TIN.—We have received an advance copy of the report and balance-sheet prepared for the half-yearly meeting of the Mount Bischoff Tin Mining Company, which gives a highly satisfactory statement of the concern. The tin smelting account shows that the total quantity of ore smelted at the company's works during the six months ending June 30 was 1925 tons, which yielded 1324 tons of metallic tin, or considerably more than one-fourth of the total output of Cornwall and Devon. The total value of the produce was 20,183*l.* 10s. 7d., and the total outlay, including directors' fees, telegrams, stores, and all other charges, was 13,103*l.* 7s. 2d., leaving a net profit of 7080*l.* 3s. 5d., which added to 27,424*l.* 7s. 9d. brought forward from previous half-year gives an available balance of 34,504*l.* 11s. 2d. Out of this two dividends, amounting together to 18,000*l.* were declared, and 29*l.* 13s. 1d. was written off as bad, leaving 16,474*l.* 18s. 1d. undivided profit to carry forward. Mr. H. W. F. Kayser reported upon the points in operation, and states that the whole of the working plant is in good order, and, from the alterations made in the furnaces, a considerable saving of coal has been effected, and anticipates that still more satisfactory results will be obtained in the ensuing half-year. The engine, boiler, and machinery have had a thorough overhaul, and these, with the various buildings in the establishment, are all in excellent condition. The directors' report, signed on behalf of the board by Mr. Henry Ritchie, the manager, congratulates the shareholders on the company's prosperity, and upon the handsome dividends paid. It is further mentined that the completion of the Van Diemen's Land Company's Tramway now affords a certain and comparatively economical means for conveying the produce of the company's mine to Emu Bay, and that the directors trust that the promised extension of the jetty at that port will soon be carried out by the Government, and give further facilities for the regular delivery of ore at the smelting works, so that these may be kept fully employed without any necessity for even occasional purchases. The strike at the mine in May caused a considerable loss to the company, not only through the non-production of the larger quantity of ore which might have been looked for from the steady employment of so many miners while there was an ample supply of water, but from the damage caused by the severe weather then experienced to the lofty faces of washdirt, and which greatly retarded the work of getting the mine into good order again. But the directors congratulate the shareholders that through the firmness and moderation of the mining manager and of his assistant, Mr. Hall, the strike was brought to a conclusion in comparatively so short a time, and that the majority of the men returned to their work quite satisfied that they had been fairly, and even liberally, dealt with.

TANKERVILLE MINING COMPANY.

In the present very depressed state of the mining interest the following report received yesterday (Friday) from the manager of this mine is so exceedingly satisfactory and encouraging that we have pleasure in giving it unusual prominence in our columns:—

Sept. 26.—We begin to-morrow to cut sump plat, and make the necessary room at the bottom of Watson's engine-shaft preparatory to sinking below the 206 fm. level. Hope to get this work completed in a fortnight or so from this date. The 206, west of shaft, is now in a lode 5 ft. wide, worth about 2 tons per fathom. We expect to meet with a large cavity in said end in about 3 fms. further driving, connected with which the principal western bunch of ore seen in the 192 and 180 may be looked for. The 206 east of Hooton's winze, east of shaft (the end is now 12 fms. from shaft), is in a lode 2 ft. wide, worth 1½ ton per fathom, and improving as we advance. There is a rich bunch of ore some 4 to 5 fms. east of the present forebreast. In shooting down the sides of the said 206 fm. level from shaft eastward, we have as far as we have gone laid open 10 ft. in width of lode, and have not yet got to the footwall. The lode here is composed of very fine looking carbonate of lime and lead ore of the richest quality, the yield being estimated at 7 tons of lead ore per fathom. We have not proved this discovery sufficiently to enable us to say that the ore course will or will not extend from the 206 to the 192, behind the footwall carried in sinking Hooton's winze. Present indications favour the belief, however, that the main orey pert of the great lode is standing from level to level just to the south of the present workings. The stope in the roof of the 206, west of shaft, is worth 1½ ton per fathom. The stope east of shaft, going towards Hooton's winze, is worth 2½ tons. The said stopes are carrying a portion of the lode only.

The stope in the bottom of the 192, west of the said winze, is worth 3 tons per fathom. No. 2 winze, in the 192, east of Hooton's east of shaft, is down about 7½ fms.; lode in east end and half way across the bottom of winze being worth 2 tons per fathom, and will improve as we go down. Along the bottom of the 192, east of the above winze, the lode is worth 4 to 5 tons of lead ore per fathom, and this run of ground will very likely be met with in the 206, 17 to 19 fms. east of shaft. No. 1 winze, in the 192, 11 fms. west of shaft, was started (see previous reports) in a large cavity, and on the western run of ore ground, but had to be suspended on account of a considerable influx of water. The 206 west, as stated in the foregoing, will drain the water, and enable us to cut up the ground for stopes in due course. No. 2 winze, just commenced in the 192, about 26 fms. west of shaft, is in a lode worth 1½ ton per fathom. There are three stopes in the roof of said level west, worth together 3 tons per fathom. The 120 west, as a pioneer level, now about 40 fms. from the shaft, is in a small lode, and not to value. The 92 cross-cut, south from the old lode, is driven about 7 fms. Two or three branches have been intersected south of old lode, but the principal side lodes must be looked for within the next 10 fms. driving.—South Lode: The stope in the back of the 74, west of winze, is worth 1½ ton per fm. There are 10 pitches at work, by 21 men, at tributes varying from 5*l.* to 6*l.* per tons of dressed ore. We are sending out samples of 100 tons best quality ore for sale next week.—ARTHUR WATERS.

WILD DUCK, OR SPORTSMAN'S ARMS.

"It's a long time seemen to me," says Jemmy Dowa, "since we had a speech from the landlord." "We can't all be taalken at once," says Uncle Henny, "and I'm sure we shall hears omethen worth while after the denner es settled and we've had a puff of the pipe all round." "Well, then lev me tellee," says Jan Temby, "that some of the big ones are not a bit pleased to hear what Cudden Har T—— told the capn a little while ago." "He told the truth," says "Uncle Henny," and I will insist that all settens or contracts are for the future. No man can see through the ground, and in common honesty there should always be a fair price 'in sight,' fixed, for this is the whole secret of inducement for men to work hard, and the setten should be without reference good or bad to what was done last month, or what is caal'd contract work or setten for so much a fathom is nothing but humbug and cheating honest workmen. Men only want fair play and hard work and will lev the 'four weeks' months for the tea-drinking excursion men. A first-rate man will not manage a mine unless he's paid, why should he, and his wages every month is the same ef his baal is paying or losing, or paying dividends, and thousands of pounds in debt; but, ef a worken man gets 6*l.* this month by the sweat of his brow, his price is cut so that he shall not yet do his best, but 30s. next month. I tell ee men, this plan is hurting the adventurers so well as the men, for ef the had always a fair price in sight the would do two fathoms for one. The so caal'd system of setten for men to get 55s. or 60s. a month and no more is offering a prize for laziness and upstarts that pick up a few 2s. 6d. shares in a baal, swell up like bull's beef, and say the miners don't half work." "I have beeen listening, men, for some time," says Cousin Will, "and also at former meetings, with a good deal of interest to your discourse, and I will read for you part of the speeches of two great men. The first is from the late W. Jory Henwood. He said—'I should be wanting in duty to my countrymen if I were not to add that I have seen them confronted with native superintendents and workmen in many foreign lands, and have invariably found the solution of every intricate problem in mining geology assigned to a Cornish agent, and every task requiring skill, resource, and courage, entrusted to a Cornish miner.' The next is from W. W. Smyth, than whom we have no higher living authority. He said—'Let us not too hastily conclude that men who have not received an education in the ordinary sense of the word are wanting in a thorough and satisfactory knowledge of a branch of their own craft. Some of the best amongst our tributers and pitmen that I have known have been men without any knowledge of reading or writing, but whose natural acuteness, joined to constant observation during the experience of years, have enabled them to accumulate a store of facts which may be envied by those who have been brought up more conversant with paper and print. Whatever is to be done in the way of instruction—Heaven forbid that anything should interfere with this excellent class of men. As a workman I believe that our British miner is unrivalled. After hearing the opinion of the greatest authorities in England, the honest, hardworking miner need not care two pins for the remarks of any man, and as tin and copper, in my opinion, will never again reach former high prices, an entirely new system must be introduced in the working of our mines in order to hold our own and compete with the foreigner. But this great change of system will not be brought about by quacks or starving the working miner." "Now, men," says Jemmy Dowa, "I think after that grand speech the 'four-weeks month men,' the little big committee men, the swelled up little capns, and mighty sharedealers, must shut shop, or if sensible men hark to them much longer they'll soon shut up the bals, wherever the little-big-men have power things are sure to go from bad to wuss?" "I'll propose," says Old Tom, "that we'll have the biggest jug in the house filled with punch to drink the landlord's health." This was agreed to, and during a very pleasant meeting Jan Jewill said—"I wonder, comrades, that more bals are not worked to the west of West Seton. There is plenty of new ground going west. Many years ago a trial was made at Wheal Vylet, and Capn Gilbert Whitenin said 'twas a bal turned upside down by G—d. That was his report, and nothing done since. The Lyles a long time ago opened some very keenly lodes on Trejothan Downs, but dedn't do much. Their little bal was caal'd Wheal Camborne." "Can any man tell," says Jan Temby, "if the silver-lead, jack, &c., in Wheal Rowe or West Roskear is the tail end of a great run of copper lodes, or the beginning of a run of lodes of lead and jack? Rich lumps of pure silver was found in the Herland Mines, further west, in cross-courses in former workings." "I don't know who can answer your question, Jan," says Old Tom, "except the larned men in the 'Camborne Institution,' but lev me ax the question how it can pay a pare well to dress halvans and slimes, &c., and don't, so the' say, pay the adventurers to do it?" "It is owing entirely," says Uncle Henny, "to the neglect of the capn dresser and the laziness of his pare. Some years ago our engines did a duty of more than one hundred millions. Now it is but little over seventy millions. West's engine at Fowey Consols, with 1 cwt. of coal, did a duty of one hundred and fourteen millions." "I think," says Jan Temby, "that Mr. West should begin again, and let people see what can be done."—*From Cousin Jack's Unpublished MSS.*

WORKING BRAKES ON RAILWAYS.

With a view to utilise the lateral oscillation or play of a railway carriage in relation to its wheels and axles in accumulating power for the purpose of working the brakes, Mr. EDWARD TYER, of Old-street, proposes to mount on the carriage a lever, one arm of which has a roller adjusted so as nearly to bear on or against the boss or other convenient portion of one of the wheels of the carriage, or against a disc or collar on the axle. The other arm is pressed downwards by a spring or weight. The axle of the roller works an eccentric or crank which gives motion to the piston of an air-pump for the compression or exhaustion of air or other fluid contained in a reservoir. Within the cylinder of this pump he arranges two pistons and rods, the one being the working piston, and the other piston in its normal position being pressed against a fixed stop by means of a spring. He packs both these pistons with cup leathers, having their lips turned in the same direction, so that they act as suction and discharge valves respectively. The end of the cylinder beyond the second piston communicates with a reservoir on the carriage, into which air is compressed, or from which air is exhausted by every stroke of the working piston. The spring piston forming the bottom of the pump allows for variation of stroke, jar, or concussion, and at the same time ensures that the whole stroke of the working piston is effective. The roller is set a short distance from the boss of the wheel, and only comes into contact therewith during the lateral play or side shake of the carriage with relation to its wheels and axles. When this lateral movement takes place the roller is caused to rotate by frictional contact working the pump.

When the lateral play of the carriage takes place in the opposite direction, then the roller ceases to rotate, and the pump stops. By this arrangement the action of the pump is rendered intermittent, thus preventing the generation of great heat. From the reservoir of pipe, provided with a three-way cock or valve, is connected to any suitable brake working apparatus, which consists of cylinders, fitted with pistons, or of extensible vessels, such as bellows or flexible bags, constructed and connected by brake gearing to the brake blocks in any known manner. The lever carrying the roller may be connected to the piston of a small cylinder communicating with the reservoir, so arranged that when the pressure in the reservoir has attained the maximum required the piston of the small cylinder withdraws the roller from the range of action, thus preventing the action of the pump. When by an application of the brakes the pressure in the reservoir has been altered, the piston in this small cylinder ceases to keep the roller out of range, and the pump is again worked till the pressure is restored to its normal amount.

There may be more than one cylinder or extensible vessel for working the brakes on each carriage, and in this case he connects them all by branch pipes with the one three-way cock or valve. In order to work simultaneously these cocks or valves on several carriages of the train he provides a cord or chain connected from carriage to carriage, and passing round pulleys fixed to weighted arms that work the cocks or valves, so that when this cord or chain is pulled either forwards or backwards at any point the several cocks or valves are shifted so as to put on the brakes of the several carriages, and when the cord or chain is slacked out these cocks or valves are shifted back to their normal position by the weighted arms, as above described, so as to take off the brakes.

In this manner, by extending the cord or chain throughout the train, brakes may be applied to all the wheels thereof by a pull of the communicating cord or chain from the engine, or from a guard's van, or other part of the train. In order to provide for keeping the brakes on when a train is divided, he arranges a spring buffer, which forms a stop for each of the weighted arms that work the cocks or valves when it is subjected to its ordinary working pull. When these arms are subjected to an unusual strain, such as would break the communicating cord or chain on the division of the train, the spring buffers yield, allowing the arms to move a little beyond their usual extent or stroke, so that they become engaged by catches, which hold them in the position for keeping the brakes applied, notwithstanding the fracture of the communicating cord or chain. When pumps are thus worked instead of being used for compression of air, or are applied for the rarefaction of air in a reservoir, the excess of atmospheric pressure in that case causes the application of the brakes.

WEST BASSET MINE—THE ECLIPSE ROCK DRILL.—A special meeting of the adventurers was held at the mine on Friday, Mr. Claude Daubuz in the chair. The meeting was called mainly to confirm a resolution of the committee to the effect that all shares in arrear of calls should be forfeited, and this resolution was confirmed, on the motion of Mr. Woolcock, seconded by Mr. Hocking. The Chairman mentioned that the committee thought it advisable to take advantage of the presence of the shareholders to introduce the question as to the adoption of a boring machine. Messrs. Henderson and Son, the Cornish agents for Messrs. Hathorn and Company, had offered to drive certain levels in the mine with their air compressor and drill, which had been recently introduced in the county, and was shown at the Polytechnic Exhibition held at Falmouth, where it obtained a first silver medal. Messrs. Henderson were prepared to supply and fix in working order, and entirely at their own risk and cost, the Reliance Air Compressor and Eclipse Rock Drill of Messrs. Hathorn and Co., to fix the pipes for the conveyance of compressed air, and drive from Granville shaft levels to the extent of 100 fms., at the present price of hand labour, 10*l.* per fm. If it proved a success they offered to sell it to the mine at their list price. He (the chairman) thought he need scarcely say that rock-boring by machinery had been very successful, and he believed that if they could open up their levels at a reasonable cost, and at double the present speed, they would be doing great good, and conferring a benefit on the general body of adventurers. (Hear, hear). Mr. J. Henderson added that in regard to the repairs, of which so much had been said Messrs. Hathorn and Co., in order to establish confidence, undertook to keep their machine in repair for six months from the date of purchase free of charge, except in case of malicious damage or accidents through blasting. After the expiration of six months they would keep it in repair for a guinea a year. The Chairman remarked that the machine was at work in several mines, and they had received reports of its success. It had been working at the Roman Gravels Mine over twelve months. Mr. J. Hocking, jun., said he had received a communication from Capt. Waters, of Roman Gravels, who told him that where they were formerly driving 10 ft. a month by hand labour, they were now driving 6 fms. per month with Messrs. Hathorn's machine. The cost was about the same as hand labour. The discussion then dropped, on the understanding that Messrs. Hathorn, drill should have an immediate trial.—*West Briton.*

A petition has been presented to the High Court of Justice for the winding-up of the Hamilton's Windsor Ironworks.

IMPORTANT NOTICE—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the *Mining Journal* to many countries will be reduced to one-fourth. Henceforth the subscription will be 1*l.* 10s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxemburg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Servia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1*l.* 19s. (50 frs.)

Mining Correspondence.

BRITISH MINES.

ABERLLYN.—John Roberts, Sept. 25: We shall finish clearing the deep adit and laying the tramway up to the cross-cut leading to the winze this week. We shall then finish clearing the cross-cut in order to ascertain whether or no the lode is cut through in that level. The blende lode in No. 2 adit is looking better than I have seen it before, and it seems to be opening even wider than it was when first cut through.

ASSHETON.—G. Rickard, Sept. 17: The following are the current prices for the pitches, &c.:—No. 1 pitch, over the 50, east of boundary, by four men at 60s. per ton for lead; No. 2 pitch, by four men, at 72s. 6d.; No. 1, below the 40, west of Browne's, by two men, at 110s.; No. 1, below the 40, east of Browne's, by two men, at 110s.; No. 2, below the 40, east of Browne's, by two men, at 120s.; No. 1, above the 50, west of Mawr's, by four men, at 100s.; No. 1, above the 20, on north and south lode, by four men, at 80s.; No. 2, by two men, at 120s.; No. 1 pitch, below the 8, at Gundry's, on north and south lode, by four men, at 80s.; No. 1, below adit, north of Lindow's, by three men, at 120s.; No. 2, by two men, at 90s.; No. 3, by three men, at 120s.; No. 4, by two men, at 100s. The 50, to drive south of Mawr's, on north and south lode, by two men; the 20, to drive south on north and south lode, by four men; the 50, 65 drive east of boundary, by two men. The number of pitches let have recently increased, and at present the prospect of increased sales of lead ore are improving. It is intended to push on the driving of the 20, to unwater and ventilate Gundry's, &c., and open out tribute ground above the level.

BEDFORD UNITED.—R. Goldsworthy, Wm. Phillips, Sept. 26: No lode has been taken down in the 138 or 127 since last report. The stopes are producing their usual quantity of ore.

BETTS-Y-COED.—H. T. Haley, Sept. 23: The lode in the winze has improved during the last few days, worth about 25 cwts. of lead per fathom. The other places are without any material alteration since last week—all looking well. As we are progressing satisfactorily with the surface work I have put six men to stope in the back of the shallow adit, where they will get some good lead. The masons are getting on well with the building.

BLUE HILLS.—S. Bennetts, P. Bennetts, Sept. 21: The 80 east end on the top lode is just now in broken ground, and the lode not of much value. The main lode at the same level in the east end is gradually improving; it is about 2 feet wide, and worth 8*l.* per fathom. The north lode in the east end is looking very well, and worth 15*l.* per fathom. The sinking of the Blue Burrows shaft to communicate with this end as soon as possible is resumed.

BODIDRIS.—H. Hotchkiss, Sept. 25: The sinking in bottom of the 60 level on Maes-y-pwll lode is progressing satisfactorily; the lode is of fair average width, and looking promising. In the 45 end east on middle lode we are making good progress, and the water is still oozing out of the roof; the men in the new shaft are to be heard very plainly in this level, and I am hourly expecting to tap the water so as to drain the shaft. The shaftmen are busy with the sinking of the easternmost shaft, but the water has been rather more troublesome the last few days; lode and ground very promising, and producing ore as last week. No change in the stope in the bottom of the 30 level—producing rich ore.—Surface Work: The carpenter and smith are busy preparing pit head and pulley frame. The engine will be fixed in its place to-morrow; I hope to have it ready to work one day next week.

BODIDRIS.—(Special Report).—H. Hotchkiss, Sept. 26: My report of last week informed you of our having met with good stones of ore in the sinking of the eastern shaft. I have now to inform you of a further very great improvement at the same point. The lode has opened out in width and increased in value, and will now produce fully 1 ton of first rate lead ore per fathom. The importance of this improvement should not be underrated, and that you may understand it more clearly I must state that this shaft, being at the present time the most easterly point of our workings on the main lode, is the pioneer whereby we prove the extension or otherwise of the courses of ore which have been discovered further west in the 30 and 45 yard levels, and appeared to be dipping in the direction now being opened out by this eastern shaft. It is a great point gained to know that our anticipations are so far corroborated by what has already taken place; and, should it continue as it now is, we may safely conclude that the ore is holding for the whole distance between the two points, and that the success of our mine will be fully established. As the eastern shaft will now become the chief centre of our operations, and the one through which the greater portion of our produce will be raised, the engine that we have had some time in readiness will be immediately placed at this shaft. This engine is fully adequate to all the work required of it, both pumping and drawing. Other parts of the mine continue to look satisfactory, and I am pleased to be able now to send you so good an account of our prospects.

— Sept. 26: We have succeeded in draining the easternmost shaft through the 45 level. This is a good job done, as we shall no longer be hindered by water in this part of the mine.

CLEMENTINA.—John Roberts, Wm. Sandoe, Sept. 25: The wheel-pit is progressing very favourably.

DE BROKE.—J. Phillips, Sept. 25: We are carrying only a portion of the lode in the 55, driving east of Wilson's; the part carried contains quartz, sulphur, and spots of copper. The deposit of ore opened up by the 45 should be met with in 5 fms. driving in this level. The lode in the 45 east is 4 ft. wide, and more compact and promising. The 25 east is unproductive. The trial drift below the 25 yields fine stones of ore, but is somewhat irregular in produce. The ore in the eastern stope, in the 45, is lengthening westward, and, on the whole, looks likely for a continuance of productive ground between levels. The orestuff from stopes worked out, and from those now working, is rather under the usual quality. Dressing and all other surface work is in full activity.

D'ERESBY CONSOLS.—John Roberts, Wm. Sandoe, Sept. 25: There is nothing new to report here this week; both the Gorse heading and the east and west lode are the same as last week. The latter is still letting out a large stream of water from the forebreast.

D'ERESBY MOUNTAIN.—John Roberts, Wm. Sandoe, Sept. 25: The No. 1 adit is not so rich for lead, but still a beautiful lode of gossan and blende. The lode in No. 3 adit is a little wider than last week. We think it advisable to put up a rise directly to effect a communication between this level and the winze in No. 2 level, so as to open out stopes here. The stope in No. 4 is not so rich, as it is nearing the surface, and being so full of stuff we cannot go down till that stuff is cleared away. We are getting on very well with opening the level, so as to clear the tramway from the winze to No. 5 adit. At No. 5 adit we have had rather a troublesome piece to spill through this week, one of the sides being nothing but decomposed shale and slime. The machinery works splendidly, but we cannot work during rain for want of sheds over the belts; this defect will be remedied in a day or two.

DERWENT.—J. Morpeth, Sept. 23: I beg to hand you herewith the list of bargains let here on Saturday last, with estimates of ore, &c.—Jeffries' Shaft—Middle Vein: The 95 fm. level, 80 fathoms east of the shaft, is by the side of the vein; 8 fathoms back from the end we are stripping down the vein in this level, which is 6 ft. wide, and yielding 2 tons of ore per fathom. Over this level we have five stopes following the end—No. 1 is 6 ft. wide, worth 16 cwts. of ore per fathom; No. 2 is 6 ft. wide, worth 24 cwts. of ore per fathom; No. 3 is 5 ft. wide, worth 15 cwts.; No. 4 is 4 ft. wide, worth 14 cwts.; and No. 5 is 8 ft. wide, and worth 30 cwts. per fathom. The 93 fm. level, 148 fathoms west of shaft, was driven last month 2 fms. 5 ft. 7 in.; the vein in the present end is 2 ft. wide, and yields spots of ore, but nothing to value. In the back of this level the vein in each stope is 4 ft. wide—No. 1 has improved to 12 cwts. of ore per fathom; No. 2 is poor, and yielding only 8 cwts.; No. 3 is a pretty lode, a mixture of limestone, fluor, some iron, and lead ore, worth of the latter 26 cwts. per fathom; and No. 4 is gradually improving, at present worth 17 cwts.—Sun Vein: This vein in the stope over the 70 fm. level, 12 fathoms west of shaft, yields 10 cwts. of ore per fathom. The 70 east, 25 fathoms from the shaft, is 3 ft. wide, and worth 13 cwts.; and the stope following in the back is of like width and produce.—Westgarth's Shaft—Middle Vein: The 93 fm. level, upon this vein, was extended eastward from the shaft last month 3 fms. 6 in., reducing the distance between this end and the 93, west from Jeffries' shaft, to some 19 fathoms; the vein is coarser than for some time past, yielding at present 10 cwts. of ore per fathom. No. 1 stope, in the back of the 74 fm. level, 190 fathoms west of of shaft, is 2 ft. wide, and worth 10 cwts. of ore per fathom. No. 2 is also 2 ft. wide, producing 14 cwts. of ore per fathom.

EAST CRAVEN MOOR.—David Williams, Sept. 26: The new shaft from surface is down 8 fms. 4 ft. 6 in., in a vein 3 ft. wide, and worth 16 cwts. lead ore per fathom. In the cross cut south from the 42 to the parallel veins we have driven through a branch of spar about 12 in., and producing good spots of lead ore. Other points without any change to notice this week. On surface we have completed the tramway to new dressing-floors, and the studs over the floors will be finished this week.

EAST DARREN.—Sept. 25: The cross-cut south at the 92 east has been driven during the past month 2 fms. 3 ft. through stiff ground, containing at times small strings of lead ore. The 92, east of cross cut, on No. 1 branch, has been driven 2 fms. 1 ft. 9 in. in a lode 2 ft. wide, yielding from 12 to 15 cwts. of lead ore per fathom. Richard's winze sinking under the 80, west of cross-cut on junction, is now down 10 fms.; the lode at present contains but little lead, and not sufficient to value. The 80, east and west of cross cut, on No. 2 branch, has been driven 1 fm. 2 ft. in a lode 4 ft. wide; opening tribute ground. The tribute pitches and stopes throughout the mine are without change to notice. The machinery is in good order, and we hope to sample on Tuesday next, October 1, 35 tons of good quality silver-lead ore.

EAST VAN.—W. Williams, Sept. 26: The 70, cross-cut has been driven 13 fms. 2 ft., and has thoroughly proved the lode. The south part of the lode was unproductive. We have driven 2 fms. eastward upon the north part of the lode, which to-day begins to open out, and contains spar, a strong mixture of blende, and nice spots of lead. I should like to see it accompanied with more water.

EAST WHEAL LOVELL.—R. Quentrall, Sept. 25: Fatwork: There is no alteration in the 80 cross-cut north since my last report. We have opened a little upon the branch we met with, which is now 3 in. wide, containing pretty much mundic, and letting out a little water. We shall further open upon it whilst we are driving the cross-cut. In the south ground we have commenced driving east at the bottom of the south shaft, where the lode is being carried 4 ft. wide, and no north wall; it is a large, promising lode, and contains a little tin. The lode in the north shaft appears to be again forming itself.

GAWTON COPPER.—G. Rowe, G. Rowe, jun., Sept. 21: We have discontinued the drivage of the 117 east, and placed the men to cross-cut through the south part of the lode, which we calculate is large and productive. The lode in the winze sinking below the 105 is 9 ft. wide, worth 25*l.* per fathom. The lode in the rise going up in the back of the 105 is worth 12*l.* per fathom. The lode in the winze sinking below the 95 is carried 6 ft. wide, producing sulphur mundic and ore to the value of 10*l.* per fathom. The tribute department is without change. We are busily engaged in preparing for our next sampling of copper ore, which we calculate will be about 180 tons, or over.

GOGINAN AND LEVEL NEWYDD.—Sept. 25: In the pitch over the 130, east and west of western shaft, the lode varies from 8 to 12 ft. wide, producing 14 to 16 cwts. of ore per fathom. In the pitch over the 120 fm. level, 65 fathoms west of Bryn Pica shaft, the lode now yields 13 cwts. of ore per fathom. The lode in the pitch over the same level, 10 fathoms east of the western shaft, is 6 ft. wide, worth ¼ ton of ore per fathom. In the pitch over the 110 fm. level, 16 fathoms east of the western shaft, the lode yields at present 9 cwts. of ore per fathom. The lode in the pitch over the 100, 10 fms. west of the western shaft, is worth 12 cwts. of ore per fathom. The pitch over the 100 fm. level, 12 fathoms east of western shaft, has become poor, and suspended, and the men are now working over the 80 fm. level, 10 fathoms west of Gilbertson's shaft, where the lode will yield ½ ton of ore per fathom. The pitch over the 100, west of Taylor's shaft, yields 13 cwts. of ore per fathom. The two pitches over the 60 are worth 10 to 12 cwts. of ore per fathom. In the pitch over the 26 the lode will produce 11 cwts. of ore per fathom. The machinery is in good working order, and all surface work is being pushed on with full dispatch. We have now a good supply of water, and the reservoirs are quite full. Samples of 33 tons of good quality silver-lead ore were sent out on Tuesday, Sept. 17, for sale on Oct. 1.

HINGSTON DOWN CONSOLS.—T. Richards, Sept. 26: Bailey's Shaft: In the 172 east the lode has a very promising appearance, and is worth 3 tons of ore, or 6*l.* per fathom. In the stope in the bottom of the level the lode is composed of capel, quartz, mundic, and copper ore, producing 5 tons, or 10*l.* per fathom. In the stope in the back of the 172 east the lode, although not so rich at present, is still a good course of ore, producing 7 tons, or 25*l.* per fathom. In the 160, west of Nicholl's winze, the lode is without change. In the tributers' sink, in the bottom of the 160, the lode continues to be worth 10*l.* per fathom. In the tributers' stope and pitch, in the back of the 110, the lode is producing some good saving work, and promising improvement. In the deep adit fair progress is being made.

LADYWELL.—A. Waters, Sept. 26: There is no improvement to write about here since my last report. The men at new shaft are cutting ground preparatory to sinking below the 16 fm. level. We have to day sold 25 tons lead ore for 226*l.*

MARKE VALLEY.—William George, James Stenlake, Sept. 20: We beg herewith to hand you our usual monthly setting report. To drive the 90 west on Rosedown lode, by six men, at 11*l.* per fathom; the lode in this end maintains a regular size—about 2½ ft. wide—and is still producing good stones of copper ore, but not enough to value. To stope the south part of Rosedown lode below the 80, by six men, at 8*l.* per fathom; worth 5 tons of copper ore per fathom. To continue stripping down the north part of the lode below the 60, by four men; worth 3½ tons per fathom. To stope the back of the 60, by four men, at 4*l.* 5s. per fm.; worth 4 tons per fathom. To stope the back of the 50, by four men, at 3*l.* per fathom; worth 2 tons per fathom. Three stopes in the back of the 40, by four men in each—No. 1, at 3*l.* per fathom, worth 3½ tons per fathom; No. 2, at 2*l.* 10s. per fathom, worth 4 tons per fathom; and No. 3, at 3*l.* 15s. per fathom, worth 3 tons per fathom. To drive the 30 west, by four men, at 7*l.* 10s. per fathom; lode 2½ ft. wide, without any material change during the past month, and still producing occasional good stones of ore. Having intersected the south part of the lode in the cross cut south at the 20 we have set to drive east on the same, by two men, at 7*l.* per fathom; worth 1 ton of ore per fathom. Two stopes in the back of this level—No. 1, by four men, at 3*l.* 10s. per fathom, worth 4½ tons per fathom; and No. 2, by two men, at 2*l.* 15s. per fathom, worth 3½ tons per fm. To drive the 10 west, by four men, at 4*l.* per fathom, and a tribute of 2s. in 1*l.*; the lode is 2½ ft. wide, worth 2½ tons of ore per fathom. To stope the back of the 10 by six men, at 3*l.* per fathom, worth 4 tons per fathom. We have also set the following tribute pitches on Marke's and Rosedown lodes:—One pitch in the back of the 117 fathom level, on Marke's, by two men, at 9s. in 1*l.* One pitch in the back of the 100, on Marke's, by two men, at 13s. 4d. in 1*l.* One pitch in back of the 90, on Rosedown, by two men, at 13s. 4d. in 1*l.* One pitch in the bottom of the 60, on Rosedown, by two men, at 13s. 4d. in 1*l.* Two pitches in the back of the 50 fathom level, on Rosedown, by two men each, at 9s. 6d. and 13s. 4d. in 1*l.* One pitch in back of the 10, by four men, at 7s. in 1*l.*

MELLANEAR.—John Gilbert, Sept. 25: The lode in the 30, west of cross cut, west of Gundry's shaft, is 2 ft. wide, worth 1½ ton of ore per fathom. The lode in the 40, west of shaft, is still 5 ft. wide, worth 4 tons per fathom. The rise in the back of this level is worth 2 tons per fathom; this rise will be holed to the 30 some time next week. The lode in the 50, west of shaft, is 4 ft. wide, and worth 3 tons of ore per fathom. The lode in the 60, west of shaft, is 4 ft. wide, and worth 4 tons of ore per fathom. The lode in the 70, west of shaft, is 4 ft. wide, worth 2½ tons per fathom, and the ground is a little harder for driving. The lode in the 80, west of shaft, is worth 1½ ton of ore per fathom, but there is more lode standing on the north side, and we have put the men to-day to take it down, to see if it contains any ore. The lode in the 90, west of shaft, is 5 ft. wide, and is a very fine looking lode, producing good stones of copper ore, lead, and blende. The lode in the 100, east of shaft, is 5 ft. wide, producing 1 ton of ore per fathom; this level is now very wet, as it has drained all the water from the level above, and it is just getting under the run of the ore ground. I think we may expect an improvement very soon. The lode in the 100, west of shaft, is 5 ft. wide, and producing good stones of copper ore. The lode in the 100, west of skip shaft, is producing a little saving work for copper ore, worth about ½ ton per fathom, and looks very promising. All our stopes are producing their usual quantities of ore, and there is no change in any other bargain since last report.

MINERAL CORPORATION OF GREAT BRITAIN (HAFNA MINE).—Wm. Bennetts, Sept. 25: The lode in No. 1 adit end is looking well, worth 1½ ton of lead ore per fathom. No. 1 stope, in the back of No. 1 adit, is worth 1¼ ton per fathom. No. 2 stope, in the back of No. 1 adit, is worth ¾ ton of lead per fathom. In No. 2 adit the men are making good progress in clearing the adit. In No. 3 adit, since we communicated the rise to No. 2 adit level, I have put the men stoping east of the rise; lode worth ¾ ton of lead ore per fathom. In No. 4 adit the ground in the cross-cut still continues favourable for driving, and presents every indication that we are getting near the lode. I am glad to say that the Hafna Mine is looking much better than I ever expected to find it, and a short time with a small outlay will prove what I have said respecting it.

MONYDD GORDDU.—James G. Green, Sept. 25: I am sorry to inform you that our winding rope broke at the beginning of the week, which has prevented us drawing the quantity of stuff contemplated at the date of my last report. I hope, however, to have all in order again to-night. In consequence of this we have not been able to clear the 34 cross-cut. We have also been delayed in dressing. There is no change to notice in our underground bargains. I shall sample a parcel of lead and also one of blende at the latter end of next week.

MORFA DU.—T. Mitchell, Sept. 26: The bottom end is again improving. The lode is getting better defined, and yielding more ore than when last reported on. The forebreast is still very wet. We have finished clearing out the old intermediate level, having reached the forebreast, in which we find a cross-joint corresponding with a cross joint in the level below. We have dialled the ground, and found the said cross-joint being at the most convenient point for sinking a winze through to the 36 for ventilation, footroad, &c. We find some good blue stone about this place, and we hope to get out sufficient bluestone in sinking the winze 7½ fathoms to pay for the sinking. Saturday next will be setting-day.

NEW BRONFLOYD.—Thomas Kemp, Sept. 26: No. 3 Shaft, North Lode: The part of the lode carried by the 121 end, west of winze, is for the present disordered by a cross joint, being composed of killas, carrying strings of spar, intermixed with a little ore, but not to value. I think this change is temporary, and that the lode will soon again improve. Since last report the stull to the east of winze has been completed, and the men have resumed stoping; the lode is worth 25 cwts. of ore per fathom, in ground extremely hard for breaking.—Middle Lode: The lode in the 73 end, west of Curtis's cross-cut, is equal in value to former reports. At a point about 3 fms. behind the forebreast a cross-course about 2 ft. wide, principally decomposed killas, crossed the drivage, running nearly north and south, inclining west 2 ft. 6 in. in 6 ft.; this level is opened on a bearing of 7° south of west, and after passing the said cross-course about 6 ft. the main or ore bearing part of the lode was met with, bearing 30° north of west, consequently the said level is being driven obliquely through the ore. I have for the present brought the men back to this point to strip down the side of level on the face of the cross-course, the object of which is to ascertain whether the ore will make through the same and back east. Should this prove to be correct, the main cross-cut is not sufficiently extended to intersect the main part of the lode; however, this will shortly be proved. The part of the lode opened on by the 52, east of No. 2 shaft, is still without any change, composed principally of killas, but at times producing good stones of ore. The part of the lode carried in sinking the winze in the bottom of this level is composed of killas, carrying strings of ore, in ground favourable for breaking. All other bargains are without any change since last reported. During the last two or three days our crusher has been idle, undergoing slight repairs; however, we hope to commence crushing again to-morrow morning. The parcel of ore (25 tons) sold on the 14th inst. to the Panther Lead Company realised 11*l.* 15s. per ton.

NORTH CORNWALL.—Thomas Doidge, Sept. 20: There is no change to notice since my last. The lode continues to show a most promising appearance.

PARYS MOUNTAIN.—T. Mitchell, Sept. 26: There is no change of any importance in the 90 south this week; we have another small branch now crossing the forebreast, containing sulphur and copper. The ground continues much the same as when last reported. Saturday next will be setting day.

PATELEY BRIDGE.—C. Williams, Sept. 26: There is no change in the mine worthy of remark since my last advice. We have sold 20 tons pig-lead, on the 21st inst., for 300*l.* 13s. 1d.

PENHALLS.—S. Bennets, P. Vian, Sept. 21: The south part of the lode in the 70 east end is poor; the men are now employed cross-cutting north to intersect the other part. The west end on the same section of the lode is worth 10*l.* per fathom. The 60 east end is close under a small slide, and the lode in that point is not very productive. The 55 east, on the south part of the lode, is worth 12*l.* per fathom, and the 48 west 7*l.* per fathom.

PENSTRUTHAL.—W. Polkinghorne, Sept. 26: In the 88 fm. level, driving east and west of Highburrow shaft, the men are making fair progress in driving. In the rise in the back of the 72, east of Highburrow shaft, the lode is producing saving work for tin. In the 72, driving west of Highburrow shaft, the lode is 3 ft. wide, orey throughout; a very promising end. In the 34, driving east of Highburrow shaft, the lode is 2 ft. wide, worth for tin 6*l.* per fathom. In the 46 cross-cut, driving south of Highburrow lode, we have no alteration to make any remark upon.

PRINCE OF WALES.—John Andrews, Sept. 25: The tributers in the back of the 24 are still raising some moderate quality silver ore, a small portion of which is of very good quality.

ROMAN GRAVELS.—A. Waters, Sept. 26: Fair progress is being made in sinking for bearers and cistern below the 110 at the new engine-shaft. There is a strong wide orey lode in the 110 going north and south of the above shaft, worth 1 ton and 1¼ ton per fathom respectively. The 95 south is worth 3 tons per fathom. The 80 south is twitched up a little, now worth 2 tons per fathom. The 65 south is worth 1 ton per fathom, and looks like improving again. The 40 south is today into a cavity, lode yielding good solid lumps of ore. The stopes generally are quite up to late valuations. A full report will be sent to you for the meeting on Wednesday next. We have to-day sold 180 tons of lead ore for 1840*l.* 10s., and 30 tons of blende for 87*l.*, together 1927*l.* 10s.

SOUTH CONDURROW.—Wm. Rich, Wm. Williams, H. Abraham, Sept. 25: The lode in the 30, east of engine-shaft, is letting out water freely, and is worth 7*l.* per fathom. The 40 east is worth 6*l.* per fathom. The 40 west is worth 6*l.* per fathom. The 50, west of the Plantation shaft, is worth 10*l.* per fathom. The 50, east of ditto, is worth 8*l.* per fathom. The 50 end, east of King's, is worth 10*l.* per fathom. The 50, west of King's, is worth 9*l.* per fathom. The rise in the back of this level is worth 30*l.* per fathom. The winze in the bottom of the 50 east is worth 10*l.* per fathom. The 70, east of King's, yields a little tin. The 70, west of Plantation shaft, is worth 7*l.* per fathom. The rise on the back of this level is worth 9*l.* per fathom. The 80 east end carries low quality tinstone. The 93 end west is worth 9*l.* per fathom. The 93 east is worth 18*l.* per fathom. The stopes and pitches throughout the mine are yielding good tinstone.

SOUTH DARREN.—H. James, Sept. 26: The new pitwork is working remarkably well, and the water is in fork. No lode has been taken down in the 100 end west for the week. We intend commencing to-morrow to take down the lode in the 90 end, which is still looking well on the side close to the forebreast. We have put in soliar in the bottom of the 90 winze, and have commenced driving the 100 in a good lode, the value of which will be given you next week. The stopes throughout the mine are looking very well, and quite equal in value to my report last week.

SOUTH DE ERESBY MOUNTAIN.—J. Hitchins: Having this month twice inspected the state and prospects of this adventure I am much pleased to state that there is an evident improvement since I reported thereon on July 11, when I was so favourably impressed with the general character of your property here. No. 1 cross-cut has now been driven through the large lode for about 24 ft., showing lead ore, more or less, for the whole distance, and I should not be surprised, judging from the run of the lodes as shown by the map sent out by the D'Eresby Mountain Company, comparing and taking into account the size of the lodes seen here and in the new shaft, to ultimately find this to be the continuation of the Gorse lode coming south. In No. 2 adit, on No. 1 lode, I was much gratified at the discovery made here within the last few days of a fine leader in the lode, containing solid lumps of lead ore from 10 lbs. to 15 lbs. or more, worth fully 1 ton of ore per fathom, and in the other parts for a distance of 3 ft. or more there are blotches of ore mixed up altogether most promising of such indications as in my opinion to be sure to lead to a further improvement, and I shall be much disappointed if you have not soon a more valuable course of ore, the more so as the character of the containing rock is to my view very congenial, and of a more temperate nature, through which explorations can be carried on with greater speed than in some of the other mines in the district, which in itself is well known to be a matter of great consideration in mining operations. In regard to the erection of a water-wheel I unhesitatingly advise your providing one of sufficient height and power in preference to picking up anything secondhand if not very suitable, which latter in the end will be found to be dearer and more troublesome than the supplying a good new one.

— J. Bennetts, Sept. 25: There is nothing new calling for any remark in the mine since my last report. All being well we shall take down the lode in the course of a few days, when we will advise you of its value.

SOUTH MOLTON CONSOLS.—T. Harris, T. May, Sept. 21: The ground in the adit cross-cut is of hard quartzose slate, with narrow veins of clay-slate interspersed, in which we find nice spots of yellow copper ore and blende, and we look upon this as a very encouraging feature, as we are approaching the line of the lode, which we calculate is now only about 6 fms. to 7 fms. ahead of the present end.

SOUTH ROMAN GRAVELS.—J. W. Powning, Sept. 26: Shelve: Since last report some splendid stones of lead ore have been raised out of the winze sinking below deep adit on Sawpit vein; the part of the lode carried is about 3 ft. wide, and looks very promising for a further improvement. We shall not strip down the spar course, which is 4 ft. wide, until we get deep enough to put down the lift, which I calculate to do by the end of next week. The whole of the little portable engine is delivered on the mine, and we are now busy cutting room at the 40 to receive it. No time shall be lost in getting it fixed and ready for work. I calculate to reach the depth specified in your note (15 fms.) in from three to four months, and believe that 250*l.* at the most will cover all expenses.

SOUTH TOLCARNE.—Wm. Rich, J. Knotwell, Sept. 24; The 36 end east is still in a hard bar of ground, and the lode smaller than usual. The 24 end west is without material change, producing good stones of copper ore.

ST. PATRICK.—Wm. Francis, Sept. 25: The cross-course in the 120 yard cross-cut north continues of the most encouraging nature, and I look forward with certainty to this leading us into a good discovery; the progress is satisfactory. There is no change in the 60 yard cross-cut north.

TANKERVILLE.—Arthur Water's report on these mines, dated Sept. 26, is published in this week's Journal in another column (page 1068).

TAN-YR-ALLT.—John Davies, Sept. 25: The lode in the 22 continues to improve as we go on; we have started a stope behind, the men driving where the lead is worth 1½ ton per fathom, the stope behind that continuing the same—say, 3 tons to a fathom. We also intend to put on a third stope in this level further south, where we were stoping some time ago, the lead being worth from 1 ton to 1½ ton per fathom. I have put the men in the 12 to strip down the side of the level east, where the lode has been left standing near the ladder-way winze, where there is a fine course of ore; the ground being whole up to the adit, this is a continuation of the big stope above the adit, and has never been touched below at all, the levels being all west of it. I hope to sample another parcel of ore next week.

TEMPLE.—Sept. 25: In No. 1 the lode extends over the whole width of the level, full of bands of spar, some blende, and occasional spots of lead. Nos. 2 and 3 levels are without change since last report. Progress is being made with the machinery, but the weather has not been at all favourable for surface operations. We have engaged underground 24 miners, at surface 14 men, in addition to engineers, masons, smiths, and carpenters, who are engaged in the erection of buildings and putting in machinery.

VAUGHAN.—Sept. 25: The 30, west of cross-cut on south part of lode, has been driven during the past month 1 fm. 5 ft. in a hard part of the lode, which in the present forebreast is a little disordered by a cross-joint; now yielding 10 cwts. of lead ore per fathom. The cross cut south at the deep level east is again being driven, and the ground becoming more favourable for progress, and the end letting out water freely. In the stope over the 30 east the lode is 8 ft. wide, yielding 1¼ ton of lead ore per fathom, and the ground nearly worked out to the level above. The stope over the 20, east and west of winze, is suspended, having been worked up as far as is safe to the 10 fm. level, above which is all fallen together. In the eastern stope over the 20 east nothing has been done more than putting in a stull, and when completed the men were removed to drive the cross-cut south at the deep level. Our machinery is in good order. Drawing and dressing being pushed forward, with a good supply of water.

WEST ASSHETON.—G. Rickard, Sept. 17: The lettings and prices current are as follows:—No. 1 pitch over the 60 west, to two men, at 120s. per ton for lead ore. No. 2 over the 60, to two men, at 80s. per ton for lead. No. 3, to four men, at 80s. per ton for lead. No. 4, to four men, at 120s. per ton for lead. No. 5, to four men, at 120s. per ton for lead. No. 2 pitch over the 50 west, to four men, at 110s. per ton for lead. All the pitches have 15s. per ton for blende. The tutwork operations are as follows:—The 40 west, driving by two men, at 75s. per fathom; the lode in this end is strong, yielding pretty much blende, spotted with lead ore, and presents indications to warrant an expectation of improvement. The 50 west, by two men, at 65s. per fathom; the lode in this end is large, but not taken down in the immediate end; as far as seen it yields saving ore. The 60 west, by six men, at 90s. per fathom; the lode is strong: the part being carried with the end is composed of blende principally, and yielding saving ore for lead. It does not contain so much ore as it did a day or two since, but shows indications of improving again shortly. Having received instructions to drive the 80 west, preparations are being made to do so. The cross-cut south in the 60 west presents indications which make us think it should be continued further. We have only been able to drive it a foot or two during the past month for want of men. About 75 fms. from shaft we have put two men to cross cut the south part of the lode, which has been allowed to stand. The price of the last blende parcel sold is unaccountably low—37s. per ton; as it is the best quality parcel that has been sold since I came. The boiler of the boundary engine having sprung a leak, we shall have to stop the engine probably for a couple of days to repair it; this will, of course, let the water in the 60 west for a day or two, and impede the hauling and dressing, &c., for a day or two as well. I may add the progress in the 60 west is very good, as to driving particularly, the distance driven during the past month being 7 fms.

P.S.—In my report to you of the 11th inst. I stated that the entire distance from the Tan-y Bwlch engine-shaft to our West Assheton boundary was about 90 fms., and that their 90 was extended east from 64 to 65 fms., leaving only about from 25 to 26 fms. more to reach our West Assheton boundary. But I notice in the last *Mining Journal* that they have yet 90 fms. more to drive to our boundary; as this is a very important error, and might be misleading, will you please correct it in this week's Journal. I also note that the Tan-y-Bwlch branches of ore will penetrate into the "Asseton sett" at a comparatively shallow depth; this should be West Assheton sett.—ALFRED EVANS.

WEST CRAVEN MOOR.—David Williams, Sept. 26: Blackhill Adit Level: The vein in the end of this level is steadily improving, being at present over 3 ft. wide, and carrying a good mixture of lead ore. No. 3 stope, west of shaft, is worth 15 cwts. of lead ore per fathom. No. 1 stope, east of shaft, is worth 16 cwts. of lead ore per fathom. No. 2 stope, east of shaft, is worth 20 cwts. of lead ore per fathom. In the 42, west of Blackhill shaft, the vein is heaved and disordered by a flatting dipping east. In the same level east the vein is 5 ft. wide, and producing occasional stones of lead ore. Nos. 1 and 2 stopes in the back of the 30, upon No. 2 vein at new east shaft, are worth respectively 10 and 20 cwts. of ore per fm. We purpose smelting another good parcel of lead ore very shortly.

WEST CWMYSTWITH.—J. Davis, Sept. 24: During the month the level west of winze has been driven about 2 fathoms. On the north side of the lode we have a strong course of sulphur and a good mixture of lead ore; I hope the lead ore is the commencement of a large deposit. The appearance of the lode is very favourable. The water here is a little troublesome, and I think it would be advisable to fix one of Warner's hand pumps to the bottom of the winze to relieve the men from having to raise the water in buckets, as at present. The cross-cut from No. 2 northward is continued on the joint previously referred to. In the present end there is a cross-course of friable spar coming in, and which may prove to be an offshoot from the lode we are seeking. At the intermediate level we are breaking some nice lead ore, and after we have opened up the ground a little further we shall be able to bring the lodestuff out in larger quantities. Penshaft's level has been driven from our starting point about 7 fathoms, and has passed through a good shoot of lead ore; the end at present is soft, and only contains blende ore. In another fathom or two I expect to intersect another shoot of lead ore here. With this report I send you working plans showing the exact position of various points of operation.

WEST GODOLPHIN.—John Pope, Sept. 25: The water in the 80 driving north on the caunter is daily improving, and is draining the 70 on Wilson's lode; judging from present appearance we shall cut Wilson's lode in the 80 this month. There is no other change in the mine worthy of notice.

WEST PATELEY BRIDGE.—David Williams: In No. 2 shaft, in the 20 east, the ore bearing part of the vein is 3 ft. wide, and carrying a leader of lead ore worth ¾ ton per fathom. A stope in the back of the level, by two men, in a vein 2 ft. wide, producing saving work for dressing of good quality. In the 28 east the vein is 3 ft. wide, composed of lime spar, gossan, and solid branches of galena of fine quality. In the 28 west the vein is 18 in. wide, consisting of spar and barytes, the latter intermixed with good spots of lead ore.—Craven Cross Shaft: Having sunk and secured this shaft to the bottom, we are now rising from the back of the 56, upon the main lode to communicate with the same. In the 63 the vein is 18 in. wide, and worth for lead ore 5 cwts. per fathom. A stope in the back of the same is worth 15 cwts. of lead ore per fathom. We shall commence smelting a parcel of lead ore next week.

WEST ROSKEAR.—H. Stephens, W. Bennetts, Sept. 26: The lode in Lanyon's shaft, sinking below the 12, is much the same as last reported; opening tributeground. The part of the lode carrying in Stephens' shaft is 6 ft. wide, with a good mixture of lead, blende, and copper—a very fine lode. We are driving by the side of the lode in the 24 west to facilitate communication with a winze before the end, which will give superior ventilation through this part of the mine. The lase pump is dropping to day, making 12 fathoms the whole lift, which we expect will reach the 36, or the bottom of the mine.

WEST TANKERVILLE.—A. Waters, Sept. 26: The lode in the 86 fm. level, south of boundary shaft, is worth 1½ ton per fathom, and looks likely to improve soon. The spar in the lode is of the colour and form noticeable at Roman Gravels about the bunches of ore on Roman lode. The stopes in back of the 86 south, three in number, are worth together 2½ tons per fathom. No change to notice in any other point in the mine.

WEST VOR.—S. Harris, Sept. 26: We have been engaged all the past week cutting small plots west of the present bottom of new shaft; this being now complete we shall draw the stuff with horse-whim, which will enable us to make greater progress in sinking. In the rise above the adit level we are up 2 fms.; the lode here continues about the same—we are saving it for tinstuff.

WEST WHEAL TOLGUS.—Sept. 25: Taylor's Shaft: The ground is just the same as reported last week, but we think we are making a little progress. The lode in the 145 end west is 5 ft. wide, yielding 2¼ tons of ore per fathom. The lode in the 145 end, west of No. 2 cross-cut, will yield 4 tons of ore per fathom. We have cut the lode in the cross-cut south in the 145, west of shaft; the lode is 6 ft. wide and the lode is 3½ ft. wide, making the cross cut 9½ ft. The lode will yield 2½ tons of ore per fathom. We shall now set to drive west on it, and when the end is in far enough we shall drive east also. The lode in the 135 end west is

nearly 3 ft. wide, yielding 1 ton of ore per fathom; this is a kindly end. The lode in No. 3 winze under the 135 is the same in value as reported last week—worth 5 tons of ore per fathom. The stopes are just the same as last reported. The lode in the 125 end west is about 2 ft. wide, spotted with ore.—Richards's Shaft: The ground is whiter than it has been, and the branches softer, with a little ore in them. There is no alteration in the 65 end, west of shaft. The average produce of the 291 tons of ore sampled last week will, we expect, be about 11.

WHEAL CREBOR.—J. Andrews, Sept. 24: Nos. 1 and 2 stopes, in the back of the 120, are worth each about 5*l.* per fathom. No. 3 stope, in the back of the same level, is worth 7*l.* per fathom. The lode in the 108 east is 6 in. wide, composed of quartz and capel. There is no change in the 72 or 48 ends. In the new shaft we have had scarcely any lode for the last 5 or 6 fathoms sinking, but in the last few days it has a better appearance, and is now 9 inches wide, composed of quartz, capel, mundic, and spots of copper ore.

WHEAL GRENVILLE.—T. Hodge, Sept. 25: I see no change in the bargains worthy of any note since my report for the meeting. All works are going on regularly and satisfactorily.

WHEAL UNY.—William Rich, M. Rogers, Sept. 21: The lode in the back of the 60, west of incline shaft, is worth 8*l.* per fathom. The 130 west is worth 10*l.* fathom The 150 west is worth 5*l.* per fathom. The 160 west is worth 8*l.* per fm. The 172, west of Hind's shaft, yields a little tin. The 160, east of Goodinge's shaft, has a kindly appearance. The 150, east of King's, is worth 8*l.* per fathom. The ground is easy for driving in the 146 east, but the lode is unproductive. The back of the 130 east is worth 10*l.* per fathom

YNYS.—P. Williams, Sept. 25: We are now stripping down the lode left by the shaftmen to the east, the lode being 12 ft. wide, and splendid stones of lead are now coming to surface; in fact, the whole of the lode for the 12 ft. is fit for the crusher, and there are two or three ribs of solid lead on it. As soon as we are deep enough we shall start to drive north under the old working, the lode dipping that way.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, Sept. 23: Profit for the month of August, 5700*l.*

DON PEDRO.—Mine captain's letter, dated August 24: General Remarks: The ore has been derived from No. 8 new shoot below adit level, and same shoot south side openings from western stopes, and a little from the following exploratory works:—Rise from No. 4 stope, 30 fm. cross-cut towards Canoa, and level north from No. 4 stope, or Pearce's Pillar. The ore has improved in quality, although still ruling somewhat low.—No. 8 New Shoot: No. 1 stope east below adit level has been suspended for want of hands. No. 3 stope east below adit level is being pro secuted regularly, but it renders but little ore, and is now carried on principally for an incline shaft, and will be known hereafter as No. 2 incline shaft.—No. 4 Stope East: The branch from No. 6 shoot is improving in size and quality. This branch, as far as we can judge at present, is a "dropper" from No. 6 main lode; it is about (average) 8 in. thick, and of good quality, but the mass obtained from this stope is of inferior quality separately from the branch, but stoping it altogether the ore is of moderate quality.

South Side Openings from Western Stopes: The stope westward being of very low class ore has been suspended. The stope eastward has improved a little, but continues to look promising for amelioration, and we are intersecting theg branches cut in the rise above section 49.—No. 2 Rise, Section 49: This is bein opened out as a stope, and is producing moderate quality mineral; the branches continue of fair size and promising appearance.—Explorations—Rise from No. 4 Stope: The branch cut in this rise is being stoped and carried with small timber; the branch is about on an average 10 in. thick, where we are prosecuting it.—Pearce's Pillar, No. 8 Old Shoot: The lower tatoo is communicated, and we are now going through the lode; some samples therefrom are of very good quality, In the 30 fm. level cross-cut towards canoa progress fair; the matrix obtained from this point is of low quality,—Prospective and Running Work: The 40 fm. level cross-cut continues in hard country, progress fair; the end is now in about 19 or 20 ft.; the end is emitting a good deal of water between the layers of jocotinga. —Incline Sump Shaft: The whim side being pushed forward to facilitate egress of ore when communicated to the 40 fm. level cross-cut; to forward this as much as possible it has been let on contract.

The requisite repairs of No. 2 incline-shaft, previous to laying a double line, are being prosecuted vigorously. The repairs of No. 2 side level are nearly completed. A pillar of timber has been built in No. 1 stope east, below the adit level, for supporting the roof. Props and sets of timber have been put in the south side openings where required. The old water level has been filled with deoris for about 20 fms., and the entrance strongly built with timber to prevent shrinkage, and consequent damage to No. 1 side level, which is almost adjoining. Bawden's cross-cut is undergoing repairs at intervals. The cross-cut from Symons' shaft to Alice's west is undergoing repairs. The timber is being prepared for making some requisite repairs to Symons' shaft.—The 60-ft. Wheel and Pumping Machinery: The 60-ft. wheel on the 17th was working remarkably well, and also on the 18th and 19th, but on the 20th the south side flange joint failed. We at once made some bolts, &c., and changed some of the broken ones on the 21st, and found that this joint required more effective ironwork than bolts, so we at once placed the smiths to make some strong clips and yokes—or, at least, as strong as could be made from the material at hand—which was completed on the 22nd, since which this joint has been and still is in a satisfactory condition, but the ironwork is not adequate for standing any length of time, but will, we hope, keep the joint safe until we can have ironwork made to secure this joint properly. The failure in the south side joint, by casting a much heavier strain on the north side joint, caused nearly all the clips and bolts to break. Our smiths not being sufficient to man the ironwork required for the securing of the flange joints, we were obliged to engage another as a native smith.

The iron work we propose to put on the south side joint consists of four clips made by a gaff way 1¼ in. deep, and the exact width of joint cut out of 4 in. solid iron, one end 2½ in. thick shoulders the other 8 in. long dropped over the joint on the four quarters; these slips will drop over the joint snug and embrace the four quarter bolts instead of heads and nuts. The eight remaining bolts and nuts screwed tight, and eight 2¼ in. square iron clips fitted between each nut and head, and closely fitting on the joint, and clipping 1¾ in. deep. A strong iron yoke 8 in. wide by 2 in. thick put over these slips and hugged together and secured with four 1¾ in. bolts each side and two cutters and gibs or screw-top staples, which may be the most convenient to embrace the clips right over the flange joint, and cover same. Another iron yoke 4 in. wide by 1¼ in. thick to embrace the 8-in. end of clips over centre piece of axle. This plan in our opinion of both officials and men will make the south side joint secure until the ironwork reaches from England. Smiths are now employed in preparing iron work for north side flange joints on same principle as was employed there before. The pumping machinery is working well, two rolls changed and three linings, 10-in. bucket changed three times, &c.—Reduction: Jiggers idle 12 hours to repair arbour of jigger top sieves, and jiggers put in fair repairs. The bottom part of wire-rope that works in No. 3 incline shaft changed as it was bad work, and some wires broken, and many little jobs done towards rolls, roads, &c.

—Telegram from Rio, dated Sept. 26: Produce cleaned up (first division of September), 700 oits

TOLIMA.—The Frias July returns show a profit of 1197*l.* 10s. The manager in his remarks observes—"In my opinion, strengthened by the results of repeated trials and careful examinations, the deepening of the mine to a sufficient extent to command the extremely rich mineral Frias produces from a multiplied number of ore stations at successive levels under the 40, is all that is required to ensure splendid returns."

COLORADO UNITED.—Sept. 3: Letters from the superintendent state—"The mine throughout is looking well. I have set a contract to drive the Union Tunnel drift west a further 100 ft., at 89 per foot; it is now in 210 ft west of the Tunnel heading. The Union Tunnel stope has greatly improved throughout. The contractors during the month beat away 35 fms. The silver ore shaft is now down 71 ft. below the Union Tunnel; the bottom shows a strong lode, good walls, and 4 in. of mineral specks of ruby silver, and very rich in argentiferous grey copper and fine-grained galena. The contractors sunk 22 ft. during the month. The breast of the 8th level, 357 ft. in from the Terrible shaft, looks well, and the lode is mineralised throughout. We have driven 14 ft. in two weeks, and I have every reason to believe No. 3 stope, when opened up, will prove as fine a block of ground as No. 2, which continues as fine as ever, averaging over 4 in. of mineral throughout. In No. 1 stope, in the 8th level, the contractors in drifting and raising made 27 fms. in August, the lode large—nearly 4 ft. wide—with good mineral on the footwall. We have here 15 tons of broken ore ready to be hoisted when we get the drift clear, which we shall do before the end of this week. Its value is fully $2000. —Brown Mine: We have drifted west from the Bishop's winze and opened up some excellent stoping ground. You may expect good returns during the month (September) from this mine.—Oneida Lease: This mine is being well worked on exceedingly high grade: the first-class 1646 ozs. to the ton, and the second-class 534 ozs. The royalty (to receive) this month will be considerable. The dressing works are working smoothly.

RICHMOND.—R. Rickard, Sept. 4: Since my last report explorations in the mine have been carried on with vigour, and I am glad to say with very good success. The winze on incline below the 500 is down 85 ft., with good ore still in the bottom. A drift has been started 75 ft. down the incline in a southerly direction; it is now in 25 ft. from the incline, with good ore all the distance, and the present breast is in high-grade ore. A small raise has been put up in the back of the incline 12 ft. in good ore. The depth of the ore in the bottom of the incline has not yet been ascertained. After drifting the southerly drift some distance I intend sinking a perpendicular winze so as to get to the footwall of the ore body and ascertain its dimensions. A winze has been started on a level with the 500 drift on the fissure, in the bottom of which there is a large mass of broken ground with ore indications; when this is passed through I expect to strike to ore. The ore body in the raise of fissure between 500 level and the No. 7 chamber is opening out very well; as far as seen the ore is 16 ft. thick, of very good quality. There is nothing new to report from any of the different drifts; they are very much the same as last week. The mine is improving daily, and the future prospects are very flattering. We have no news yet of the air-compressing machinery; I am expecting to hear of its arrival daily. The pipes and drills are all here, and we are now repairing the shaft, and shall commence fixing the pipes in a day or two. The work of repairing the furnaces and overhauling the machinery is being pushed forward as fast as possible.

FORTUNA.—Sept. 18: Canada Incosa: The lode in the 120, west of O'Shea's, is loose, open, and lets out a good deal of water, worth ¾ ton per fathom. The 30, east of San Carlos, is suspended for the present, while the men sink a winze through to the next level; lode valued at ¾ ton per fathom. In the 50, west of Abercrombie's, the lode is small, and at present without ore. In the 60, west of Abercrombie's, there is no improvement. In the 50, east of Abercrombie's, a long piece of fairly productive lode is being laid open; worth 1 ton per fathom. The 70, west of San Pedro, continues unproductive. The lode in the 80, west of San Pedro, is well defined and regular, but does not contain ore enough to value. In the 80, east of San Pedro, the lode yields good stones of ore, valued at ⅛ ton per fathom. The lode in the 70, east of San Pedro, is less productive than it was, now yielding ¾ ton per fathom. In the 120, east of O'Shea's, the lode is very wide, consisting chiefly of quartz, carbonate of lime, and lead ore, valued at 1 ton per fathom. The lode in the 100, east of Lownde's, is also an open lode, with good stones of ore; worth ½ ton per fathom. The 100, west of Lownde's, is loose, and cheap for driving, but does not contain much ore, valued at ⅛ ton per fathom. In the 90, east of Caro's, the lode is very small at present, yielding ⅛ ton per fathom. The lode in Pablo's winze, below the 80, is failing as it nears the 65, now valued at ⅛ ton per fathom. In Diego's winze, below the 110, there is a large lode, consisting chiefly of calcareous spar and lead ore, producing 1 ton per fathom. The lode in Congress winze, below the 60, is strong and well defined, worth 1 ton per fathom.—Los Salidos: The lode in the 145, east of Taylor's, is changeable, and at present less productive than it has been for some time past, now worth ½ ton per fathom. The 130, east of Taylor's, is passing through a great length of sterile ground. In the 120, east of Cox's, the lode is not so productive as it was, now worth 1 ton per fathom. The 110, east of San Miguel, is again diminishing in size and value, producing 1 ton per fathom. In the 80, west of Palgrave's, the lode is very small at present, yielding ½ ton per fathom. The 80, east of Palgrave's, has again improved, and now opens valuable ore ground, worth 2 tons per fathom. In Taylor's shaft, below the 145, the men are getting on well with the sinking. Swaffield's shaft, below the 55, is down to the 65, and will be holed by a short cross-cut. In Nieve's winze, below the 65, there is a promising and productive lode, worth 1½ ton per fathom. The returns were well maintained during the past month, and the stopes have not undergone any change of importance. The works at surface are kept on very regularly, and the machinery is in good working order. We estimate the raising for September at 300 tons.

LINARES.—Sept. 18: In the 140, east of San Tomas, there is a large lode, consisting chiefly of carbonate of lime, with good stones of ore. The lode in the 135, east of San Tomas, is very wide, but quite unproductive. The 135, west of San Tomas, continues hard and unproductive. The 100, east of Warne's, is opening up stoping ground worth 1 ton per fathom. In the 115, east of Worne's, there is no improvement. The lode in the 115, west of Warne's, is large, containing a little ore, valued at ⅛ ton per fathom. The 120, west of Peill's, is opening up a good length of valuable lode, producing 2 tons per fathom. In the 90, west of Peill's, the lode is small, consisting of quartz and lead ore, producing 1 ton per fathom. In the 120, east of Peill's, there is a regular and well-defined lode, worth 2 tons per fathom. In the 105, east of San Francisco shaft, the lode is improving a little, now worth ½ ton per fathom. No. 225 winze below the 90 is going down in a good shoot of ore, valued at 2 tons per fathom. In No. 227 winze below the 105 the lode has improved during the last fortnight, now yielding 2 tons per fm.—Quinientos Mine: The lode in the 100, west of Taylor's, is very open, and yield's a little ore, but not sufficient to value. The 100, east of Taylor's, is opening up a good length of paying ground, worth 1 ton per fathom. The 90, east of Taylor's, is in very hard granite. In the 80, east of San Carlos, the lode contains a little ore, but nothing of any actual value. Gomez' winze below the 90 is going down in a moderately productive lode, worth 1 ton per fathom.

ALAMILLOS.—Sept. 18: In the 20, west of San Felipe, there is a small vein of ore in the lode, worth ½ ton per fathom. The lode in the 100, east of Taylor's, became poor in the past week. In the 100, west of Taylor's, the lode is large, and produces stones of ore, worth ½ ton per fathom. The lode in the 85, west of San Adriano, is letting out more water, but does not contain any lead. The 60, east of San Victor, is large, open, and easy for driving. In the 70, east of San Victor, no change has taken place in the lode. The lode in the 70, west of San Victor, is unproductive. In the 60, west of San Victor, the lode is small and poor. The lode in the 40, east of San Victor cross-cut, produces a little lead, but not enough to value. In the 30, east of air shaft, the lode has a better appearance, worth ½ ton per fathom. The lode in the 30, west of air shaft, is disordered by being in contact with a slide. In the 40, south of San Carlos, the ground is favourable for driving. The lode in the 40, east of Judd's, has increased in value, now worth 1½ ton per fathom. In the 70, west of Judd's, the lode is not producing any ore. The 50, east of Judd's cross-cut, is being driven through a valuable lode, yielding 3 tons per fathom. In Taylor's shaft, below the 100, sinking is being pushed on as fast as possible. The lode in Hidalgo's winze, below the 85, is more regular, producing ¾ ton per fathom. In Ortiz's winze, below the 40, the lode is large, and produces a little lead. In Pascula's winze, below the 25, the ground is easy for sinking, lode worth ½ ton per fathom. The lode in Gigante's winze, below the 60, is strong and promising, and yielding 1 ton per fathom. In Siro's winze, below the 30, the lode is well defined, worth ¾ ton per fathom. In Carmona's winze, below the 65, good lumps of ore are being taken out of the lode, worth 1 ton per fathom.

VIRNEBERG (Copper).—R. K. Roskilley, Sept. 25: Hadley Engine-Shaft: The lode in the 140 metre level, driving north of cross cut, south of engine-shaft, is 3 ft. wide, and worth 15*l.* per fathom for copper ore. In this level, driving south of ditto, the lode has a very encouraging appearance, yielding good stones of copper ore, and promising an improvement. In the 120, driving south of shaft, we have just met with a slide, which for the present has a little disordered the lode; it is, however, yielding some fine stones of copper ore, and when out of the influence of the slide we have reason to believe that it will be found equally as rich in copper as it was just before meeting with the same. The lode in No. 1 stope in the back of the 120, south of shaft, is worth 10*l.* per fathom. In No. 2 stope in the back of ditto, south of shaft, the lode is worth 20*l.* per fathom for copper ore. The lode in the stope in the back of the 120, north of shaft, is improved for copper, and is worth 15*l.* per fathom. We have no other change calling for remark underground. The engineers are making good progress in erecting the engine and crusher. We are also making excellent progress in the dressing department, and on the 1st proximo we shall commence to carry copper ore to the Rhine for shipment; I am negociating for a vessel for shipping same to Rotterdam. Our engine and pitwork are in good condition, and working well.

PESTARENA.—T. Roberts, Sept. 24: The lode in the 100 end north and south at Peschiera, has improved, the north end now yielding 3½ tons, and the south end 6 tons of ore per fathom. We have also an improvement in the winze behind the 90 end south, where the lode is yielding 7 tons of ore per fathom. The No. 2 and No. 4 stopes in the back of this level north have fallen off considerably. The driving of the 80 north has been resumed by four men. In the 55 end north, under Acquavite, we have a slight change for the better, the lode yielding stones of ore.

All other ends and stopes not mentioned continue much the same as when last reported on. During the past week we have been hindered somewhat in the sinking of the Incline shaft, owing to a breakage of the flat-rods through the old level above the 33. The whole has been repaired, the water forked, and sinking resumed. There is nothing new to report in the Val Toppa District.

AUSTRALIAN MINES.

PORT PHILLIP.—August 3: Total quantity of quartz crushed on both the company's and tributers' account for the month ending July 17, 4439 tons; total gold obtained, 1539 ozs. 13 dwts. 12 grs. Receipts, 3562*l.* 1s. 9d.; payments, 2145*l.* 9s. 1d.; profit, 1417*l.* 12s. 8d., which added to the previous balance made a total of 3201*l.* 3s. 11d. The amount divided between the two companies was 1400*l.*, the Port Phillip Company's proportion being 910*l.* Remittance, 850*l.* The company have also received the followiug telegram, dated Melbourne, the 19th inst.:—"Month ending September 11: Gold obtained from company's quartz, 340 ozs.; gold obtained from tributers' quartz, 1194 ozs. Profit, 989*l.* Remittance, 750*l.*"

ENGLISH-AUSTRALIAN (Gold).—Captain Raisbeck, August 5: We have driven the 420 ft. level 41 ft.; distance from the shaft 317 ft.; and in consequence of not meeting with stone in the drive two of the men were put to rise on the lode, up 18 feet, but touched no stone yet The 320 ft. level has been extended 20 ft. The distance from prospecting shaft is 136 ft. In consequence of not meeting with stone the men did not make full time in the drive. In No. 1 rise we have risen 41 ft., which makes now 60 ft. from level; for the last 30 ft. we passed through a very promising lode. We crushed 30 tons of the stone separately; result about 2 dwts. to the ton. As this appears to be the tail end of the run of stone we expect a much better yield next crushing. We have commenced a rise (No. 2) 130 ft. south of prospecting shaft for the purpose of cutting the same stone as in No. 1 rise, as it will prove the stone further south, and act as an air course when connected.—Stopes: We have driven east 8 ft. from stopes, and holed to No. 1 rise, for convenience of working both places and for air. The appearance of the stone in the stopes is much the same as last month. We have crushed 57 tons. The total yield for the month is 23 ozs. 15 dwts. of retorted gold.

THE WEEK.

SATURDAY, SEPT. 21.—Business was done in Richmonds at 9⅛; shares are now well held, and little attention is paid to the alarmist rumours circulated by "friends." New Zealand Kapanga was also a firm market, shares being in demand at 1⅝; Eberhardt neglected at 4½; Don Pedro wanted at 12s. 6d.; Sierra Buttes at 1¼; Pennsylvania, 34 to 35; Reading, 16 to 17; Grand Trunk (first), 42½; second ditto, 27 to 27¾. In the foreign department Unified closed at 56½, and Turkish Fives at 12⅞.

MONDAY.—The markets were a good deal upset by the news from India that we may be involved in troubles with Cabul, and several inflated stocks had rather a serious tumble. Thus, Brighton A dropped 2¼, and Dover A 1½. Consols fell nearly ⅛ per cent. In Indian stocks dealers were reluctant to deal much; those wanting to sell the Five per cent. or the Four per cent. had to put up with a reduction of ¾ per cent. Grand Trunk Ordinary, 6⅞ to 7⅛. Mexican, 13⅝ to 13⅝. Royal Sardinian, 2¾ to 3; ditto Preference, 5⅝ to 5⅞. Mercantile Bank River Plate, 2¾ to 2¾. In mines, Alamillos fetched 1 3-16ths, Colorado 3¾, New Zealand Kapanga 1 9-16ths, Richmond 9⅛, and United Mexican 3⅝.

TUESDAY.—Without a great deal being done prices managed to show a recovery nearly all round over yesterday's depression. Unified rose ⅛; Turkish Fives closed the same, as did the 1869 issue, but there was an advance of ⅜ in Egyptian Preference. In mining shares the dealings were mainly confined to Eberhardt, Richmond, New Zealand Kapanga, and Don Pedro. Rookhope, ⅛ to ¼; Roman Gravels, 7 to 7⅛; Don Pedro, ½ to ⅝; Eberhardt, 4¾ to 4⅝; Colorado, 3½ to 4. The fortnightly settlement commences to-morrow.

WEDNESDAY.—The account now being liquidated has been an uneventful one, and in few instances is there a change exceeding 1 per cent. from the previous settlement. Colorado shares were continued at 3½; last time it was 4½. Richmonds then only made up at 8¾, to-day it was 9¾. Eberhardts have improved from 3¾ to 4⅛. Most lead mines have lost ground. Laxey shares to-day were only continued at 17¼; last account it was 18¼. The decline in Van has been from 18 to 17. The feature to-day was the jump in Richmonds from 9¼ buyers to 10 buyers.

THURSDAY.—Richmond advanced to 11, 11⅛; Clementina, 1⅜ to 1⅝; Pandora, 10s. to 15s.; East Van, 2⅛ to 2¾; Great Laxey, 17 to 17½; West Tolgus, 50 to 52½; South Condurrow, 10½ to 11; Mellanear, 4 to 4¼; Devon Consols, 2 to 2⅛; Leadhills, 2 to 2¼; Colorado, 3½ to 4. In railways, Caledonian and North-British were both knocked down, the former falling about 1 per cent. The foreign market was irregular, Egyptian stocks being higher, and most Turkish issues lower.

FRIDAY (*Opening*).—There is a great depression, amounting to flatness, in the railway market, owing to a renewal of the rumours started two or three days back affecting the stability of a large concern in the North. If matters go wrong, as now feared, it is supposed that a great deal of Caledonian and North British stock may be thrown on the market. Attempts are being made to sell large quantities of both, but the market refuses to buy, and shrinks when tested. Caledonian is ⅜ down (103 to 103⅜) and North British 2*l.* (92 to 92¼). Midland is down 1*l.*, Great Western and Metropoliton 10s. The settlement is being rapidly proceeded with, and the account being only a small one will be concluded early. Richmonds are down slightly, being 10⅝ to 10⅞. Egyptian Unified and Turkish Fives are the same as last night.——*Two o'clock.*—British have been as low as 91¾, but are now 93¾. Caledonian are a quarter better (103¼ to 103⅜). North-Eastern now shows a fall of 1¼ (138¼ to 138¾). The foreign market is quiet, and shows little change. Richmonds have recovered to 10¾, 11. New Zealand Kapanga, 1⅛ to 1⅝. Sierra Buttes, 1¼ to 1¾. Pandora, 10s. to 20s.; rain having fallen operations have been actively resumed. Parys Mountain, 4s. to 6s.; Morfa Du, ⅜ to ⅝; Bookhope, 10s. to 15s.; South Darren, 1½ to 2.——*Four o'Clock.*—Renewed depression has set in, and during the last half hour stocks have been recklessly offered almost at any price by the large dealers. North Eastern, 137½ to 138; British, 92 to 92⅜; Chatham Preference, 88⅜ to 88⅝. Unified now show a fall of ⅝ on the day. Bilson and Crump, 3 to 3¼; Frontino, 2¼ to 2⅜; Van, 17 to 18; Chapel House, 2¾ to 3; Newport Abercarn, 4¼ to 4¼; Cardiff and Swansea, 1¼ to 1⅝.

FERDINAND R. KILK.

WATSON BROTHERS' MINING CIRCULAR.

Ten years ago the weekly information which had previously been published for a great number of years in WATSON BROTHERS' Mining Circular was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the Journal on the Clementina Mine.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to *recommend* mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

WATSON BROTHERS,
MINE OWNERS, STOCK AND SHARE DEALERS, &c.
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fornightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

The directors of the D'Eresby Mountain have received an offer of 2000*l.* for the Valley sett, giving the company also the use of the No. 5 adit, which is all they require. It seems, however, that the plan we have before proposed of selling this sett to a separate company, the shares of which should be offered *pro rata* to present holders, as well as the idea of selling the sett altogether, cannot be carried out without the consent of every shareholder, so that at the last moment a holder of one share could upset any proposed arrangement. The directors, however, have full power by their articles to raise capital in any way they please, and they have submitted to the shareholders a plan for increasing the shares and raising ample capital to work the Valley by the present company. The new capital will be issued to present holders so as to give them a good bonus, and the payment will extend over a period of nine months. It may be interesting, therefore, to say a few words upon the Valley sett.

The great Gorse lode at D'Eresby Mountain was discovered near the end of No. 4 adit, and in the Valley sett, which did not then belong to the company, but thus became of the greatest value to it, having a run southwards, on the great lode, through the valley for 300 fms., and the No. 5 adit for its whole length. This latter became necessary, also, to drain the Mountain 16 fms. below No. 4, and enable Nos. 1, 2, 3, 4, and 5 levels to be continued another 300 fms, *into* the Mountain sett.

After some weeks of anxious negociation the Valley sett was obtained at a dead rent of 100*l.* a year merging in royalty, but beyond clearing No. 5 adit nothing has been done with it, for the simple reason that all the capital of the company has been required to develope the Mountain. In the Valley there are three shafts in the shale part of the Gorse lode down to No. 5 level. By the side of No. 2 shaft another was sunk on the hanging part of the lode, and evidently in rich lead (as explained on our visit in May last, see *Mining Journal* of May 18, page 532) as far as the water would allow the men to work, and a portable engine placed here to pump out the water might soon result in a valuable discovery. A sett which would command a premium of many thousands of pounds in the market, and may shortly double the value of D'Eresby Mountain, should not have remained idle so long, and, under all circumstances, the directors, who hold more than one-fifth of the whole shares in the mine, have now submitted the best plan for developing it.

We understand that although the proposition of the directors was only sent out to the shareholders on Tuesday last, the day the above remarks were written, proxies have already been sent in for the majority of shares, approving the plan of working the sett by fresh capital in the way proposed. This plan will not only give ample capital for the Valley, but sufficient to increase the machinery as required, so that at D'Eresby Mountain any profits on sales of lead may the sooner be divided.

SATURDAY, SEPT. 21.—Market quiet. Tin shares firm at quotations. South Condurrow, 10½ to 11; South Frances, 4¾ to 5¼; Dolcoath, 23 to 25; Tincroft, 6⅞ to 7⅛; Carn Brea, 35 to 40; Agar, 3¾ to 4; Peevor, 6 to 6⅛; Clementina, 1¾ to 1⅞; Aberllyn, 11 to 13; Great Laxey, 17 to 18; Van, 17 to 18; Roman Gravels, 7¼ to 7¾; Tankerville, 3 to 3⅛; West Tolgus, 50 to 52½; Morfa Du, 15s. to 17s. 6d.

MONDAY, SEPT. 23.—Market again quiet, South Frances and Tankerville in demand. Van, 17 to 18; Great Laxey, 17 to 18; Pateley Bridge, 3⅛ to 4; South Frances, 4¾ to 5¼; Tankerville, 3 to 3⅛; Roman Gravels, 7⅛ to 7¾; Rookhope Lead, 10s. to 15s.; Leadhills, 2 to 2¼; Pevor, 6 to 6¼; Parys Mountain, 5s. to 7s.; East Van, 2½ to 3; Clementina, 1¾ to 1⅞; Devon Great Consols, 2 to 2⅛.

TUESDAY, SEPT. 24.—Market continues very quiet, and the following are almost nominal quotations. Carn Brea, 35 to 40; Dolcoath, 23 to 25; South Condurrow, 10½ to 11; South Frances, 4¾ to 5¼, and firm; Tincroft, 6¾ to 7; Agar, 3¾ to 4; Peevor, 6 to 6¼; Grenville, 2 to 2⅛, call paid; Aberllyn, 11 to 13; Clementina, 1¾ to 1⅞; East Van, 2½ to 3; Great Laxey, 17 to 18; Leadhills, 2 to 2¼; Pateley Bridge, 3⅛ to 4; Roman Gravels, 7¼ to 7¾; Rookhope Lead, 10s. to 15s.; Tankerville, 3 to 3⅛; Van, 17 to 18; Grogwinion, 2¼ to 3; Wye Valley, 1⅝ to 2; West Wye Valley, 2¼ to 5; West Tolgus, 50 to 52½; Devon Great Consols, 2 to 2⅛; Morfa Du, 15s. to 17s. 6d.; Parys Mountain, 5s. to 7s.; Penstruthal, 3s. to 5s.

WEDNESDAY, SEPT. 25.—Market very quiet, and prices are about the same as quoted yesterday.

THURSDAY, SEPT. 26.—Market quiet. Richmond chiefly in demand at an advance. Van, 17 to 18; Great Laxey, 17 to 18; Roman Gravels, 7 to 7⅛; Tankerville, 3 to 3⅛; Pateley Bridge, 3⅛ to 4; Morfa Du, 15s. to 17s. 6d.; South Frances, 4¾ to 5¼; South Condurrow, 10½ to 11; Clementina, 1¾ to 1⅞; Aberllyn, 11 to 13; Peevor, 6 to 6⅛; West Tolgus, 50 to 52½; Parys Mountain, 5s. to 7s.; Richmond, 11⅜ to 11½; Eberhardt, 4½ to 5; Santa Barbara, 1¼ to 1⅜.

FRIDAY, SEPT. 27.—Market for tin shares weaker. Carn Brea, 32½ to 35. Dolcoath, 23 to 25; South Frances, 3¾ to 3¾; Tincroft, 6 to 7; Agar, 3¾ to 4; Peevor, 6 to 6¼; South Condurrow, 10½ to 11; Aberllyn, 11 to 13; Roman Gravels, 7 to 7½; Clementina, 1¾ to 1½; Great Laxey, 17 to 18; Pateley Bridge, 3⅛ to 4; West Chivertön, 4¼ to 5⅛; Van, 17 to 18; Tankerville, 3¼ to 3¾.

CORNISH PUMPING ENGINES.—The number of pumping-engines reported for August is 16. They have consumed 994 tons of coal and lifted 7·4 million tons of water 10 fms. high. The average duty of the whole is, therefore, 50,200,000 lbs. lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

Dolcoath—85 in. ..... Millions	59·7
Mellanear—Gundry's 80 in.	56·5
West Tolgus—Richard's 70 in.	85·8
West Wheal Seton—Harvey's 85 in.	71·6
West Wheal Seton—Rule's 70 in.	73·3

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence and Co. (Sept. 21)—Alum: Loose lump, 6*l.* 7s. 6d. to 6*l.* 10s.; ground, 7*l.* 5s.—Arsenic: Best white powdered, 8*l.* 7s 6d.—Borax: Refined, English, 36*l.*—Copperas: Green, 52s. 6d.: white, 8*l.* 7s. 6d.—Copper: Sulphate, 19*l.*—Nitrate of Lead, 31*l.* 15s.—Saltpetre: Refined English, 27*l.* 10s.—Sulphate of Zinc, 12*l.* 12s. 6d.—Sulphur: Roll, 8*l.* 10s.; flowers, 10*l.* 10s.—Tin crystals, 6½d. per lb.—White Lead, Sulphur: Roll, 8*l.* 10s.; flowers, 10*l.* 10s.—Tin crystals, 6½d. per lb.—White Lead, 21*l.* 15s.—Barytes: Carbonate, 100s.—Brimstone: Best thirds, 5*l.* 10s.—China-Clay, 39s.—Oxide of Zinc, 22*l.* 10s.—Talc, 5*l.*—Umber, 70s.—Charcoal: Best stick, 4½d. per bushel; field burnt, 7d.—Globe Steam-Boiler Powder, 20s. per cwt.—Naphtha, 60 per cent., 3s. 8d.

A petition has been presented to the High Court of Justice for the winding-up of the Last Chance Silver Mining Company of Utah.

*** With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: The Ventilation of Mines by Impulsion (W. Morris); the Abercarne Explosion; Major Ford's Report on the Yarlside Accident; London Coal Supply (W. H. Thompson); Abortive Commercial Undertakings; Rock-Drills (Hathorn and Co.); Rock-Boring Machinery (Le Gros, Mayne, Leaver, and Co.); Boring Machines (H. Wadding ton); Mid-Devon Mining Company (T. N. Roberts); Combined Rail and Wire Tramway; Young Men's Farming Association (R. Brock); Mining in New South Wales (R. D. Adams); Richmond Mining Company (J. Elliott, R. M. Brereton); the Richmond Mine—Messrs. F. W. Mansell and Co.); the English Lead Trade: the Cornish Miner at Home and Abroad; Copper Mining; South Condurrow, and Wheal Grenville; the late Captain Jo eph Vivian (H. Waddington, R. Symons); the West Godolphin Mine; Lead Mining in Flintshire; Pant-y-Mwyn Lead Mine (J. Metherell)—A New Industry for Cornwall—Foreign Mining and Metallurgy—Modern Steam, Air, and Gas Engines—Improved Rock-Drills—Manufacture of Sulphate of Alumina—Registration of New Companies—The Scotch Mining Share Market—Patent Matters—Meetings of the West Chiverton, East Chiverton, Native Guano, New Battle Mountain, and Combmartin Companies, &c.

TO THE METAL TRADE.

FOR COPPER, TIN, LEAD, &c., apply to—
MESSRS. PELLY, BOYLE, AND CO.,
SWORN METAL BROKERS,
ALLHALLOWS CHAMBERS, LOMBARD STREET, LONDON.
(ESTABLISHED 1849.)

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, SEPT. 27, 1878.

IRON.	£ s. d.	£ s. d.
Pig, GMB, f.o.b., Clyde..	2 6 7½	—
,, Scotch, all No. 1 ...	2 8 6	3 10 0
Bars, Welsh, f.o.b. Wales	5 2 6	5 5 0
,, ,, in London.	5 15 0	—
,, Stafford., ,, .	6 15 0	7 10 0
,, in Tyne or Tees ...	5 5 0	5 10 0
,, Swedish, London ..	9 0 0	9 10 0
Rails, Welsh, at works..	4 15 0	—
Sheets, Staff., in London	8 5 0	—
Plates, ship., in London	6 15 0	—
Hoops, Staff.	7 10 0	—
Nail rods, Staff. in Lon.	6 0 0	6 15 0
STEEL.		
English, spring	13 10 0	19 0 0
,, cast	30 0 0	40 0 0
Swedish, keg	14 0 0	—
,, fag. ham.	15 0 0	—
LEAD.		
English, pig, common..	15 15 0	—
,, ,, L.B.	16 0 0	—
,, ,, W.B.	16 15 0	—
,, sheet and bar..	17 0 0	—
,, pipe	17 10 0	—
,, red	19 0 0	—
,, white	24 0 0	26 0 0
,, patent shot ...	20 10 0	—
Spanish	15 12 6	—
NICKEL.		
Metal, per cwt.	18 0 0	20 0 0
Ore, 10 per cent. per ton.	24 0 0	26 0 0
QUICKSILVER.		
Flasks of 75 lbs., ware..	6 17 6	—
SPELTER.		
Silesian	17 15 0	18 0 0
English, Swansea	18 0 0	—
Sheet zinc	21 10 0	22 10 0

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; IX 6s. per box more than IC quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

TIN.	£ s. d.	£ s. d.
English, ingot, f.o.b...	61 0 0	—
,, bars ,, ...	62 0 0	—
,, refined.....	63 0 0	—
Australian	57 15 0	—
Banca	60 0 0	(nom.)
Straits	57 15 0	—
COPPER.		
Tough cake and ingot.	66 10 0	67 0 0
Best selected	67 10 0	68 0 0
Sheets and sheathing.	71 0 0	—
Flat Bottoms	74 0 0	—
Wallaroo	69 10 0	—
Burra, or P.C.O.	68 10 0	—
Other brands	64 10 0	65 0 0
Chili bars, g.o.b.	60 0 0	60 5 0
PHOSPHOR BRONZE.		
Bearing metal	£10	0 0
Other alloys	£110 0 0	125 0 0
BRASS.		
Wire	7½d.	8d.
Tubes	7½	—
Sheets	8¼	8¾
Yel. met. sheath. & sheets.	6	7
Nails composition	8¼	9
TIN-PLATES.*	per box.	
Charcoal, 1st quality ...	1 0 0	1 2 0
,, 2nd quality ...	0 19 0	1 0 0
Coke, 1st quality	0 16 0	— 0
,, 2nd quality	0 14 6	0 16
Black .....per ton	16 0 0	16 10 0
Canada, Staff. or Gla., at Liverpool	11 10 0	12 0 0
Black Taggers, 450 of 14 × 10	30 0 0	—

REMARKS.—It would surely not be asserting too much in favour of business to say that under ordinary circumstances it is scarcely possible for it to undergo greater depression than has been witnessed for so long a time past, and further than this, it can be a matter of no small importance after such severe prostration to be able to hold out hopes of the end of the depression being at last reached. To have arrived at such a juncture must be a decided and immense advantage, and a source of congratulation—an advantage, too, which we trust will be fully realised, and prove to be an abiding, as well as a profitable, advantage. A point of so much significance can be no less than the turning point or corner which leads to more settled and prosperous ways, and, if prudently taken advantage of, cannot fail to meet with ultimate success. The low level to which copper, tin, and lead have been brought renders their several positions tolerably safe, and although it is utterly impossible to foresee every trifling fluctuation which may happen to take place, yet consumers may rest assured that the considerable depreciation which has already occurred is one of the greatest guarantees of their future security, and if, by reason of any financial pressure, holders are forced to realise some portion of their stocks at any greater sacrifice, it would probably only exercise a very slight and temporary effect. Prices of the above metals are sufficiently low to ensure a good home and foreign demand, and, therefore, by judicious management, the markets ought to be well maintained, but people must not anticipate too much at first.

If they think that inflation will suddenly follow stagnation, they will in all probability be disappointed; for the process of recovery must necessarily be slow, although less so than on many former occasions, because facilities of all kinds abound now to a greater extent, and these will naturally assist in restoring the commerce of the world. Political and financial affairs appear to be making fair progress, and gradually getting into a more satisfactory condition; therefore, it will be a very singular circumstance if commercial affairs remain long unimproved. It is not so much from existing and impending evils that our markets are suffering as from the effects of original causes, and that involves a mere question of time as to when things will right themselves, and get in proper and regular order. There are many good and strong reasons for believing that the time is not far distant when a general resuscitation in business will take place; and if no event of an unforeseen character arises to affect, or check, or prevent its due development the amount of business transacted in the remaining months of the year may greatly exceed that of the former part, and make up in a great measure the deficiencies of previous months. A large amount of capital will be available shortly, and capitalists will be looking out for some safe and sound means of investment; but their opportunities in stocks and funds are extremely limited and wholly inadequate; therefore they will doubtless have to fall back upon produce as the only channel that is likely to afford a satisfactory return; and as metals have special claims over all other commodities, they will come in for a lion's share; but the locking up of stocks we would rather see performed by consumers, and we again urge them to be quick in their movements and secure their requirements, both immediate and prospective. Prices, with the exception of those of iron, are favourable, and consumers could not make good their stocks at a better time. There should be no delay, and all their available means should be invested in stock. The realisation of imports of copper and tin at the present time are being made at a positive loss, and the present prices are declared to be below cost of production. This being the case, and the peace and tranquillity of Europe secured, and the prospect of a better trade shortly, are alone sufficient reasons to give a strong impetus to business, and consumers should buy quickly and buy freely.

COPPER.—There has been a steady market throughout the week, and prices have slightly stiffened both for raw and manufactured. The smelters have positively refused to accept further orders at former rates, and as they have now secured a fair number of orders, and state that they are well supplied with work during the next four or five weeks, they are indisposed to sell unless slightly higher rates are obtainable; at any rate they feel that there is no necessity for them to change their views just now, for should the Indian Exchange continue to improve the demand for manufactured will undoubtedly increase, and merchants will not object to pay a little higher price. The low prices which have been ruling here have not hitherto benefited the Indian buyers, for they have lost all the advantage by the low rates of exchange, but if the exchange were to advance and a war, there would have such an effect that the demand would be immensely benefited, for shippers would be extremely eager to secure copper and yellow metal at these exceptionally low prices. As it is, shipping orders have been pretty freely given out, and it is not unlikely that actual stocks at the end of the month may show a further diminution, and should this be followed with moderate charters the position of the market will be thoroughly and firmly established. Prices may not show any immediate great advance, but they will probably gradually creep away from buyers and leave them behind, wondering how they could have lost such a brilliant opportunity in allowing the market to slip away from them. It is very dangerous in a market like the present to delay buying, for more often than not to hesitate is fatal, and if the majority of holders were to suddenly withdraw, which we fully believe they will do ere long, consumers would find themselves left in the lurch, and in a pretty fix for supplies. It, therefore, behoves them to take warning in good time, and prepare against eventualities by being prudently provided beforehand.

Anybody buying copper at present prices obtain the full value of their money, and there is no better investment. Consumers should avail themselves of the present time in every possible way, and rather than run any risk should buy double or treble the quantity they stand in present need of, for any surplus that may remain in excess of their own particular requirements will easily be turned over hereafter at a profit. The present prices must not be looked upon as permanent, for the market is only temporarily depressed, and prices are bound to rise whenever the general revival takes place. Consumers will then find it too late to make an advantageous operation, and whatever they intend to do should be done quickly, otherwise speculators will secure all the cheap copper, and buyers will afterwards have to pay them dearly for it; and if consumers neglect the opportunity it will be entirely their own fault, and they will deserve to be punished. It is stated that consumers generally are very bare of stock, and beyond what is in course of consumption it chiefly remains in first hands, therefore were the several consumers to take only a reasonable quantity into their own private stores a considerable reduction would be effected in public stocks, but this could not be done without running up prices, as a very small proportion of the stock only is to be bought at these rates, consequently there are comparatively few consumers who can get it, and that is a cogent reason for buying before any particular move begins to take place.

IRON.—Every week seems to add to the weakness of this market, and sellers find it more difficult than ever to obtain orders; trifling concessions make no impression whatever upon buyers, and it would require a substantial drop to secure anything like a reasonable amount of business, and sellers had better make arrangements at once to meet the requisite alterations, as any delay will only make matters worse, and that is quite needless. Low prices will evidently be the only inducement to buy iron, and cheap prices must eventually prevail. The competition we have to contend with entirely prevents any improvement, and as long as it exists there is no chance of a permanent increase in the demand, and we doubt whether any temporary benefit can be derived from upholding prices. If buyers can secure their wants from our opposite neighbours at a cheaper rate than what they can by buying on this side, it is not to be expected that we shall receive many, if any, of their favours. Everybody now goes to the cheapest sellers; the competition existing amongst all classes is so great that a buyer, unless he happens to be his own consumer, cannot afford to pay the least excess over and above the price at which iron can be bought at, whether it be English or foreign manufacture; a buyer is, therefore, compelled to go to the cheapest houses, however reluctant he may be to deal with new and untried firms. He, in fact, has no choice, for he has to buy at the cheapest rate in order compete successfully with others in his particular branch.

There is no particular advantage in dealers having iron at present prices; they are not even making the profits ordinarily obtained, for they have to cut down in their turn, and in the aggregate are positive losers by the low prices; but then the trade has fallen into that dilapidated state that nothing but low prices will serve for some long time to come. Our enterprising little neighbour Belgium, no doubt, chuckles at having outrun us, and she has done it so effectually that she deserves her reward; while our trade is disorganised, and masters and men are grumbling at one another, she quietly walks off with our orders, and leaves us to shift in the best way we can. Now, we have never advocated carrying war into her camp, but since she comes and spoils us she must not be surprised if we seek revenge, and it might do us all a service if we could so lower the price of iron as to enable us to supply Belgium as much below her prices as she supplies us below our prices; it would be only paying her back in her own way, and she could not well protest against that—at any rate, it would teach her a lesson not to interfere with the English consumers or customers, but we appear a long way off of that yet, and prices have first to descend to the level of those of Belgium; until that is the case the trade will remain unimproved.

It does not require a vast amount of foresight to see that when two shops are opened selling the same article at different prices the dearer one will either have to reduce prices on a par with the other, or shut up altogether. Now, as it is not desirable that the iron trade of this country should die out it is to be hoped that the struggle will be continued, and that our prices will shortly present greater temptation than those of Belgium. In that case we should get a considerable increase in the demand, particularly for common iron, and although the work would necessarily have to be executed cheaper, yet the additional quantity would fairly compensate for the deficiency in price. The demand must be improved or the works will not be able to go on, and how is it to be done other than by a reduction in prices? In a few weeks time shipments to the northern ports will be closing, and a little extra demand from other quarters will be needed more than ever. If our prices are as cheap as other houses there are fair grounds to suppose a large share of the demand will fall to our lot, but if they are higher there will be little or no chance of getting anything. The limited demand arises in great part on account of the comparatively high prices with foreign houses, and this is where an alteration is wanted; when that takes place, and not before, our markets will change from a hopeless state of decline into strong and vigorous action. By all means let us have a sensible reduction forthwith, and let the quotations be so low that Belgium cannot undersell us; the longer we maintain our rates the greater support we afford to our keenest competitor, and we thereby injure ourselves.

The advices from Staffordshire, Yorkshire, Scotland, and Wales continue of the same gloomy nature as reported for weeks past. In Birmingham trade is said to be very quiet, and no prospect of amendment.

The reports from Wolverhampton agree pretty much with those of other markets in the iron districts, but since the decline of 20s. per ton in marked iron orders have been drawn off from other firms, and are now placed with the list houses. The second-class makers quote much about the same as before, but are open to arrangements, and a slight concession in most instances would not be objected to, especially if the order were for a fair quantity; unfortunately for sellers, however, buyers of the lower descriptions of iron are not disposed to give out orders without having a considerable reduction, therefore but little business results. Very good Belgian bars, quite equal to ordinary Staffordshire, have been offered this week in London at 5*l.* 17s. 6d.; it is, therefore, questionable whether a further fall of 20s. per ton will meet the case, and it is very certain that a wide difference between the two keeps the demand further off. Pig-iron is offering freely in Wolverhampton, but not at prices which induce consumers to buy. The market closes weak, with a downward tendency in prices.

The accounts from Sheffield are rather distressing, for orders there seem to have considerably fallen off, and the tendency of the market is towards depression. Stocks are heavy, and prices unsteady. For want of fresh enquiries the Middlesborough market has declined, but sellers do not look for any marked fall before the close of the shipping season. The shipments have been satisfactory, but as they are principally the completion of former contracts they produce no good effect upon prices—higher quotations than are at present ruling are asked for next year's delivery, but such business is too insignificant to influence the market. The finished iron trade continues dull, and for plates slightly lower rates are quoted. The advices from Wales are not encouraging, as the demand for rails is dull, and orders can only be procured at unremunerative prices. At most of the works there is less doing, and prices must evidently give way ere long. As regards the Indian merchant orders for common bar-iron, they have been next to nothing for a long time past, and are not likely to increase while present prices are upheld, as Belgium make is now nearly always substituted, and the Indian markets are well supplied with this class of iron. The prosperity of our trade will not return while the English ironmasters remain so indifferent to their own interests and to the general state of the market. A comparatively new feature has cropped up of recent years in the shape of foreign competition, which in past ages did not exist to anything approaching its present dimensions, and it has to be dealt with in a very determined and resolute manner—that is to say, if we are desirous of occupying the leading position in the trade. As matters stand we are losing our customers fast, and simply for want of proper and efficient management.

The Glasgow market report this week speaks of continued dulness and declining prices. This we are not at all surprised at, and only wonder how sellers there have managed to keep prices up so long, for there is room for a much greater fall before they can compare favourably with Middlesborough iron. There is no chance of recovery, and prices appear as if they would go considerably lower. Scotland has to contend with Middlesborough in pig-iron as much as Wales has to contend with Belgium in finished iron, and until prices are properly adjusted the business will be carried off by the cheapest producers. Scotland should set about in good earnest to compete with Middlesborough, and at least out her out of the Grangemouth shipments. What is the use of storing iron at 50s. or 47s. to be hereafter sold perhaps as low as 42s., or even 40s. The Scotchmen are reputed to be a hardy race, and can live as near as most people, and thrive upon what an Englishman would starve upon, and yet they are gradually losing their trade because they do not produce their iron so cheap as their neighbours. We fear they have fallen into old fashioned ways, and want stirring up. The Scotch are said to be a saving people, but these connected with iron are now evidently a losing race.

SHIPMENTS.

For the week ending Sept. 22, 1877	Tons	8,987
For the week ending Sept. 21, 1878		7,956
Decrease		1,031
Total decrease for 1878		51,720
Imports of Middlesborough pig-iron into Grangemouth:—		
For the week ending Sept. 21, 1878	Tons	4,790
For the week ending Sept. 22, 1877		4,390
Increase		400
Total increase for 1878		6,668

FURNACES.

In blast Sept. 22, 1877	87
In blast Sept. 21, 1878	93

TIN.—Our market has been a little variable lately, and the Dutch sale of Banca, on the 25th inst., which consisted of 24,200 slabs, all of which realised about the equivalent of 60*l.* 5s. here, has kept prices in an uncertain state. There have also been rumours afloat that certain houses could not afford to keep up their margins, and that the banks or financiers who held the tin under advance had determined to realise. Whether it was really so, or that the "bears" circulated the rumours with an object, we are not prepared to say. Perhaps there might be an atom of truth in the first statement, and very big weight in the latter; but what if one or two weak holders have to succumb, the tin only passes into stronger hands. Of course, when a holder is cornered for margin he has no alternative but to take whatever price can be obtained; but that only has a momentary effect upon the market, and soon passes away—as soon as ever a defaulter is known to have cleared out away goes the price to its original standard, and perhaps above it. These prices will not frighten strong holders out of their tin, and the "bears" will have to be careful, or they will be caught. It is the "bear" sales as much as anything that has recently brought the market down; but these will have to be covered, and the "bears" had better not be too long about it, for if the market should take a turn there is plenty of room for it to run up, without in the least interfering with consumption. To catch a "bear" is considered fine sport, and as there are a few prowling about just now there is an excellent chance for a bold hunter to run them down. Tin at present prices is extremely moderate, and will soon be attracting the notice of investors. The metal has had its fall, and a very severe fall it has proved; there is no occasion now to be uneasy about its value going materially lower, and it would not be an extreme view to take in saying that the future value will probably range between 50*l.* and 70*l.* The article, therefore, is at about its lowest, and well worth buying at its present price, especially for the end of this or the beginning of next year.

LEAD.—A little more demand has set in at the reduced prices, but the market still seems in an undecided condition; at the same time, prices are so exceedingly low that buyers need not be apprehensive now of prices running down. Any further reduction will probably be slight and gradual. The market cannot keep dropping without producing a very serious effect upon the mining interest, and supplies will be checked.

SPELTER.—Prices have not altered, and the demand seems to be satisfied for the moment. The clearances have done little towards lifting prices, but in one or two instances sellers have been fortunate enough to obtain a rise.

TIN-PLATES.—The demand continues limited, and prices are no better; but as the raw material is cheaper, makers can afford to take lower prices.

QUICKSILVER.—A fair business has been done during the past week, without any change in price.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday evening. The Glasgow market closed this afternoon with buyers of g.m.b. Scotch pig-iron at 46s. 7½d.—a fall since last Friday of 10d. per ton We quote makers No. 1 iron:—Gartsherrie, 54s. 6d.; Coltness, 57s. 6d.; Calder, 56s.; Langloan, 56s. 6d.; Summerlee, 53s.; Monkland, 49s., f.o.b. Glasgow; Glengarnock, 53s.; Eglington, 48s., f.o.b. Ardrossan; Shotts, 56s. 6d., f.o.b. Leith. The Ironmasters' Quarterday will take place on Wednesday, Oct. 9, at Wolverhampton, and on Thursday, Oct. 10, at Birmingham. The latter will be held in the Iron Exchange of that town. A meeting of the tin-plate makers has been held at Swansea, and a resolution passed to curtail the time of working by the tin-plate makers to the extent of two days a week. This alteration will come into operation on Nov. 1 next, and continue for 12 months. The iron trade remains in about the same position as it was last week. We have had a quiet market in London, and the same may with truth be said of the provincial exchanges at Middlesborough, Birmingham, Barrow, Liverpool, and Manchester.

The fall in price of Staffordshire marked bars has certainly had the effect of sending more orders to those works, and there are more orders stirring, which find their way to the best makers of boiler-plates in Staffordshire and Shropshire. The best makers of plates in North Staffordshire have also more demand for this class of iron, but the second class Staffordshire makers being unable to reduce quotations find more difficulty now in keeping their mills running. With regard to the raw material the market is tolerably firm, but the question of definite prices in Staffordshire will be fixed by the transactions at Quarter-day. It is thought in well-informed quarters that under present circumstances (referring particularly to fuel) very little, if any, change can be made in Staffordshire in the price of the raw material; however, Quarter-day will settle this question, which at present looks against buyers.

The market at Middlesborough reveals unmistakable indications of weakness, and if the Glasgow Exchange continues to register lower prices the Middlesborough makers must either store their iron to a larger extent or follow the lead of their former rivals in Glasgow. Hematite iron is firm, and as there are buyers of this class for large parcels forward the weakness of Glasgow and Middlesborough is not manifested on the West Coast. In the metals there is no change to notice this week except in tin. The Metal Exchange registers a fall of 1*l.* per ton in Australian during the week. Spelter is weak; price 18*l.* for Silesian.

Messrs. BROOKER, DORE, and Co.—Baldwin's Iron: A notice was issued on the 14th inst., by Messrs. E. P. and W. Baldwin, reducing their sheets 1*l.* per ton. Taking quality into consideration, we believe that their Severn sheets (at 9*l.* at the works) are exceptionally full value, and we should not be surprised to hear of a large influx of orders, such as will compel before long a movement in prices in an upward direction. We may mention that although several makers of sheet-iron and tin-plates exhibited at the Paris Exhibition, the only gold medal for excellence of quality in those branches of the trade has been awarded to Messrs. Baldwin.—Galvanised Iron: There is a steady demand, and the works are all fairly employed, but not at remunerative prices, which show no improvement yet.—Fencing Wire: This branch of the trade remains in a very depressed state, and until the men accept reduced wages, or some of the foreign competition ceases, we see no chance of improvement.

Messrs. FRY, JAMES, and Co.—Our markets continue heavy, with still a drooping tendency in some metals.——COPPER has fluctuated but slightly, and in some descriptions a moderate business has been doing, but as a whole the market is decidedly quiet.——IRON has become still a shade lower in value for most descriptions.——TIN, after some slight variations, has again fallen in value by about 20s. per ton. At the Banca sale in Holland yesterday the average price realised equalled about 60*l.* 5s. per ton, delivered here.——LEAD has been in slack demand, and prices have again become easier.——SPELTER is quiet, but without change in value.—TIN-PLATES also are without change.

Messrs. PIXLEY and ABELL.—GOLD to the value of 392,000*l.* has been sent into the Bank since our last circular; and, as there is not at present any demand for export, all arrivals will be purchased by that establishment. The Bakhara has brought 42,130*l.* from the East. The only withdrawal from the Bank consists of 10,000*l.*, sovereigns, for Lisbon.——SILVER: The extremely moderate supplies of silver keep the market tolerably steady; and, although the demand in the early part of the week was but slight, an improvement in price was observed, and 51⅝*d.* was obtained. The result of the tenders for the India Bills yesterday further strengthened the market, and 51¾*d.* was the price; the rate is weaker to-day, on the announced increase of the amount of Council Drafts to be allotted next week, and 51⅝*d.* to 51¾*d.* is the nearest quotation. We have received about 16,000*l.* from New York during the week. The Peninsular and Oriental steamer leaving to-day takes 8000*l.* to Bombay.——MEXICAN DOLLARS: The Britannia and one or two other steamers have brought 20,000*l.* of this coin during the week. These arrivals could only be placed at 50½*d.* per oz., showing a further decline in price. They have been taken for China, but will only be shipped next week.

The settlement of the fortnightly account in the MINING SHARE MARKET has occupied the chief attention of dealers this week, and there is nothing fresh to report upon either in the way of business or improvements. The quotations for the most part are still merely nominal.

TIN MINES continue dull. The remarks of the manager of Dolcoath and of South Crofty Mines at the meeting of the latter, held in Cornwall, on Friday, are very significant of the present state of tin mining in Cornwall, illustrate in a measure some remarks we made in our last. South Crofty is in the richest district of Cornwall; when tin was at 80*l.* per ton a few years ago the shares of this mine, chiefly held in Cornwall, were at 120*l.* each, and it was looked upon as a fine progressive property. At the meeting on Friday last Captain Josiah Thomas said that if tin were going to remain at its present price it would be utterly useless to work that mine, or indeed few others in the county. With tin even at 50*l.* per ton the mine would pay well, but with the present price the sooner they stopped it the better. He had told them so 12 months ago, and tin had been going lower ever since, and he saw no immediate prospect of an improvement. At the South Crofty meeting referred to the accounts showed a loss of 1556*l.* on four months' working, and a debit balance of 3166*l.* A call of 1*l.* per share was made. The tin sold (56 tons) realised 1618*l.*; copper ore, 1030*l.* The mine is looking well in the north lode, the same that is so rich in East Pool, and there is a large quantity of tin ground that would pay well for working with tin even at 50*l.* per ton, but at 28*l.* 15s. per ton the agent considers it useless to carry on the mine, and a special meeting has to be called a month hence to consider the propriety of winding up the company.

Wheal Peevor, 6 to 6½; the mine continues to look well, the lode in the 80 opening good ore ground. The returns are about 10 tons of tin ore per week. Carn Brea, 32½ to 35; Dolcoath, 23 to 25; East Pool, 8½ to 8¾; Penstruthal, 3s. to 5s.; South Condurrow 10½ to 11; South Frances, 4⅜ to 4¾; Tincroft, 6 to 7; West Frances, 1½ to 2; Wheal Grenville, 2 to 2½; Wheal Agar, 3½ to 4.

COPPER MINES show not the slightest change, and there is no business doing in them. Devon Great Consols, 1½ to 2; Parys Mountain, 5s. to 7s.; West Seton, 7 to 8; West Tolgus, 49 to 51. Morfa Du, ¾ to ⅞; the lode here is improving again.

LEAD MINES are moderately dealt in, but there is great difficulty in effecting sales to any extent even in the best properties. Van are 17 to 18; the mine never looked better in the bottom levels, and should the price of lead improve the shares will look up again. East Van, 2½ to 3; the 70 cross-cut has now been driven 13 fms. 2 ft., and has, the agent states, thoroughly proved the lode. The south part is unproductive; on the north part 2 fms. have been driven, it contains spar, a strong mixture of blende, and nice spots of lead. Roman Gravels, 7 to 7½; the sale of lead ore (180 tons) realised 1840*l.* 10s., and 130 tons of blende 87*l.* = 1927*l.* 10s. Ladywell, ¾ to 1; the sale of lead here (25 tons) realised 236*l.* Pateley Bridge, 3½ to 4; the sale of 20 tons of pig lead lead on the 21st realised 300*l.* 13s. 1d. Pandora; the directors have bought a good Robey's 25-horse power steam-engine, which is already on the mine. There is, however, a good supply of water for the wheels now.

At the East Chiverton meeting, held in Cornwall, the accounts showed a debit balance of 450*l.*, and a call of 6s. 6d. per share was made. The agent reported that in the 74 west a good silver-lead lode has been met with and opened on about 8 fathoms in length, and the end has improved to 1½ ton of lead ore per fathom. South Roman Gravels, ½ to ⅝; the report states that some splendid stones of lead ore have been raised from the winze this week; the part of the lode carried being 3 ft. wide, and very promising for further improvement. West Chiverton, 4½ to 5½; at the meeting in Cornwall the accounts, to which we referred in our last, were submitted and passed. The south lode in the bottom level, the 160, west of Batters' shaft, was reported 2½ ft. wide, producing occasional stones of lead. The 160, west on north lode, is worth 6*l.* per fathom. Tankerville, 3 to 3½; the 206, west of shaft, is worth 2 tons per fathom. In the 206, east of Hooten's winze, the lode is worth 1½ ton per fathom, and there is a rich bunch of ore 4 to 5 fathoms east of the end. In shooting down the sides of the 206 east of shaft, as far as seen (10 feet), the lode is composed of fine carbonate of lime, and lead ore of rich quality; valued at 7 tons per fathom, with indications that the main part of the lode is standing from the 192 to the 206. The stope in bottom of 192 west is worth 3 tons; No. 2 winze in 192 east 2 tons; and along the 192, east of this winze, 4 to 5 tons. The sampling is 100 tons of lead ore. At West Tankerville the 86 is worth 1½ ton of lead ore per fathom, and looks likely to improve. The spar in the lode is described as

of the colour and form noticeable at Roman Gravels about the bunches of ore in the Roman lode. South Darren, 1½ to 2⅛; the lode in the 90 has not been taken down, but the level is still looking well on the side close to the end. They have commenced driving the 100 level in a good lode. The stopes are looking very well, and equal in value to last report. Great Holway, 4½ to 5; Gorsedd, 3¾ to 4¼; Denbighshire, 1¾ to 2; West Pateley, 1¾ to 2¼; Aberdaunant, 4s. to 6s.; Assheton, 10s. to 15s.; Glenroy, ⅜ to ½.

Great Laxey, 17 to 18; Grogwinion, 2 to 2½; Leadhills, 2 to 2½; Rookhope, 10s. to 15s.; Tyn-y-Fron, 1⅜ to 1½; West Assheton, 10s. to 15s.; Wye Valley, 1½ to 2; West Wye Valley, 2½ to 3; D'Eresby Mountain, 75 to 85; D'Eresby Consols, 10 to 11. Aberllyn, 10 to 11; the blende lode is enlarging here, and there are appearances of lead. Clementina, 1½ to 1⅝; Caron, 2 to 2½; St. Harmon, 2½ to 3; South Cwmystwith, 2½ to 3; Red Rock, 2 to 2½; Hartington Moor, 1½ to 2; Mawston, 55 to 60.

FOREIGN MINES.—The chief business has been in Richmond shares, which advanced to 11, and leave off 10½ to 11; Cape Copper, 30 to 31; Colorado, 3⅜ to 4½; Chontales. 12s. 6d. to 15s.; Santa Barbara, 1⅜ to 1½; Pitangui, par to ¼ prem.; Don Pedro del Rey, ½ to ⅝; Eberhardt and Aurora, 4½ to 5; Flagstaff, 10s. to 12s. 6d.; Frontino and Bolivia, 2½ to 2⅜; Javali, 7s. to 9s.; New Zealand Kapanga, 1⅜ to 1½; Hultafall, 3 to 4; Blue Tent, 2⅜ to 3; Last Chance, ⅞ to 1; New Quebrada, 1⅜ to 1½; Port Phillip, ½ to ⅝; St. John del Rey, 280 to 290; Tecoma, ⅛ to ¼.

The Market for Mine Shares on the Stock Exchange is almost entirely restricted to a few foreign mines. During the whole day there has not been a transaction in any British mine. In foreign mine shares there have been a few transactions in Richmonds at very unsteady prices, as any alleged discovery beyond those already announced is much doubted; the shareholders were already aware that certain points were daily improving in value, and it is thought that one of these improvements has been magnified into a new discovery. Cape Copper, have been done at 29½, ex div.; Colorado United at about 3⅜; Frontino and Bolivia, 2½; New Quebrada, 1⅜; and Rio Tinto, 62. In connection with the question of machine mining, attention may be directed to the illustrated description of a new air compressor, published in another column, the writer having had considerable experience in the designing and use of machines of the same class.

The secretary of the Young Men's Farming Association has furnished a satisfactory elucidation of the prospectus criticised last week. The precise character and intentions of those concerned can now be well understood. The undertaking commences upon a small scale, but takes powers to extend its operations as opportunity offers.

Reference was make in last week's Journal to a Cardiganshire mine, for some time under the management of Messrs. John Taylor and Sons, and it was said that "the system pursued in working only shallow levels has been a serious error in judgment." The firm in question do not claim infallibility of judgment, nor are they always fortunate, but in the particular case mentioned the mine is not shallow—being 150 fathoms deep; and although there is a fair chance at greater depth, they are content to let others have the advantage. It must be remembered, too, that no mine abandoned by Messrs. John Taylor and Sons has afterwards reimbursed the capital subsequently expended on it.

St. John del Rey, 280 to 290; the latest telegram from Morro Velho, dated Rio de Janeiro, Sept. 23, states that the profit for August was 5700*l*. Don Pedro North del Rey, ½ to ⅝; the clean-up for the 1st division of September was 700 oits. The damage to the 60-ft. wheel and pumping machinery by the failure of the south side flange-joint is being patched up satisfactorily until ironwork can be got out from England. Capt. Joseph Vivian has arrived in England from Brazil by the last steamer, and advantage will be taken of his visit to hold the interim general meeting, in order that the shareholders may have the opportunity of hearing his views relative to the prospects of the company. Capt. Vivian will leave again for Brazil on Oct. 9.

Richmond, 10½ to 11; nothing seems to be known at the company's offices concerning any discovery of importance during the past week, and it is believed that the particulars published, and which have created some slight excitement, are merely the confirmation of information officially known and made public three weeks since, and which was elucidated by the details published in last week's Journal. The existence of a large body of ore between No. 7 chamber and the new discovery in the 500 was duly announced, as was also the fact that the discoveries made proved that the ore bodies met with in the 400 continued in depth. If there be any discovery unconnected with No. 7 chamber, No. 10 chamber, or with the 500 drift on the fissure, the shareholders are to be congratulated; the announcement of any discovery at or between these points would add nothing to existing knowledge. If there be really any new discovery or improvement it reflects seriously upon Mr. Rickard that the directors and general body of shareholders should be kept in ignorance of it. Mr. Rickard (September 4) wrote—"The mine is improving daily, and future prospects are very flattering." In this connection the San Francisco Scientific Press (Sept. 4) states that—

"Two important strikes have lately been made in the leading mines of Ruby Hill. The Richmond was first to the front with an important development, and now comes well authenticated rumours of a splendid find on the 1200 ft. level of the Eureka Consolidated. If true, and we can hardly doubt it, this is the deepest point at which ore has been found in this district. It is doubly important from this fact, that it tends largely to assure the future of Eureka. It is thought that the Leopard chute has been struck in the Hussey."

The next official telegram from the mine will be looked forward to with much interest, and it may be found that the announcement of the alleged new discovery is as void of foundation as was the statement a few week's since from the same source that the mines were flooded.

Along the whole line of the Comstock there is just now an immense excitement. There are now so many mines in which cross-cutting is being done, and in which developments may be expected at no distant day, that there is considered to be a wide field for speculation. Some of these mining events are referred to as now being ripe, others are ripening, and not a few are just beginning to take tangible shape. In the Julia and some other mines south strikes may be made at any moment, in others they cannot be looked for until the lapse of some weeks or months. The only thing that will prevent a good and active market is an undue excitement, the rushing up of prices beyond reasonable figures, and the usual collapse.

Eberhardt and Aurora, 4½ to 5; it has been determined to raise 14,000*l*. by debentures, exchangeable at any time upon certain conditions for ordinary shares at par; and it is understood that a large proportion of the amount has been subscribed. Capt. Drake explained verbally at a recent meeting the nature of the operations carried on in the mine, expressed great confidence in the future prospects, and urged the shareholders not to abandon the concern after so large an outlay, when they were so near success. It was agreed that Capt Drake should put up a rise in the tunnel beneath the rich ore bodies gone down above.

Colorado United, 3⅜ to 3⅝; the superintendent's letters (Sept. 3) are encouraging. The mine throughout is looking well. They have 15 tons of broken ore in No. 1 stope, in the 8th level, ready to hoist, when they get the drift clear—it is worth fully $2000. At Brown Mine they "have drifted west from the Bishop's winze and opened up some excellent stoping ground. The shareholders may expect good returns duaing the month (September) from this mine. Oneida Lease is being well worked on exceedingly high grade; the first-class 1666 ozs. to the ton, and the second-class 534 ozs. The royalty (to receive) this month will be considerable. The dressing works are working smoothly."

Hultafall, 3 to 4; the lead-dresser late in the service of the Van Mining Company has arrived out, together with the new machinery for the dressing department.

Lead Mine shares have been rather more in favour, although the lamentably low price of lead renders it extremely difficult even for the best of the mines to realise a profit; thus it is announced in another column that the Pateley Bridge Mine sold 20 tons of pig-lead for 300*l*. 13s. 1d., which is only a fraction over 15*l*. per ton—a price which only a few years since would have been paid for lead ore; and what is the more discouraging is that there is but very little prospect of improvement, as the consumption of the metal is not largely increasing, whilst at home, in the colonies, and in foreign countries new and extensive deposits are constantly being discovered, which with the slightest improvement in the price of metal would quickly be turned to commercial account; and in addition to this, there is a large amount of American lead, for which a market is wanted. With regard to British lead mining, it is confidently asserted by one of the best living authorities that it will for a long time be very difficult to earn profits in connection with it unless the mine lords come forward handsomely and largely reduce the dues on the one hand, and unless a more economic system of working be generally introduced on the other. It has been proved, he remarks, that a tin mine can be made to cover cost with tin at 35*l*., and lead miners must begin to regard 8*l*. or 10*l*. as the normal price for their produce if British lead is to be kept in the market.

Tankerville, 3 to 3½; an important improvement has taken place in this mine. Reporting on Thursday, the agent reports that in the 206, east of Hooton's winze end, now 12 fms. from the shaft, there is a lode 2 ft. wide, and there is a rich bunch of ore some 4 or 5 fms. east of the present forebreast. In shooting down the sides of this 203 fm. level from shaft eastward they have laid open 10 ft. of lode without seeing the footwall. The lode is fine carbonate of lime, with rich lead ore, and is estimated worth 7 tons of lead ore per fathom. The general appearance of the mine is decidedly more encouraging.

Pant-y-Mwyn shares quoted at 5¼ to 5½; it is reported that "the monthly returns are being increased. The profits on the working are upwards of 200 per cent. It is probable that the next dividen t will be 4s or 5s. per share."

Mineral Corporation, 10 to 11; with regard to the Hafna Mine Capt. William Bennetts reports that the ground in the cross cut from No 4 adit still continues favourable for driving, and presents every indication that they are getting near the lode. He is glad to say that the Hafna Mine is looking much better than he ever expected to find it, and a short time with a small outlay will prove what he has said respecting it.

British Silver-Lead, 2 to 3; the lode in No. 2 shaft is reported to increase in value as depth is obtained, the ore being found in more solid ribs, and they have now a large pile of orestuff on the surface. They are drawing the water out of the old shaft, and expect to find a rich course of ore on the bottom, as the seconds left by the former company are very rich in ore.

Van, 17 to 18; the 105 west is looking splendid, and other parts of the mine also looking as well as last reported. Grogwinion, 2½ to 2; the news from this mine continues satisfactory. Wye Valley, 2 to 2⅛; no fresh news this week. West Wye Valley, 2¾ to 2¾. Saint Harmon, 2⅛ to 3; all going on well at this mine, and good progress making. Caron, 2 to 2⅛; prospects considered excellent, and good quantities of lead being raised. Mawston, 55 to 60; Huntington Moor, 1⅛ to 2. Pateley Bridge, 3¾ to 4¼; the mine continues as last reported, no change having occurred in any part. West Pately, 1¾ to 2¼; there is nothing special to report this week.

Subjoined are the closing quotations:—

Assheton, ¼ to ¾; Carn Brea, 30 to 32½; Devon Great Consols, ¾ to 1¼ prem.; Dolcoath, 22 to 24; East Caradon, ¼ to ⅛; East Van, 2½ to 3; Glenroy, ⅜ to ½; Great Laxey, 17 to 18; Hingston Down, ⅛ to ⅜; Leadhills, 1¾ to 2¼; Marke Valley, ⅜ to ⅝; Parys Mountain, ⅛ to ⅜; Pateley Bridge, 3¾ to 4¼; Penstruthal, 3-16 to 5-16; Roman Gravels, 6¼ to 7¼; Tankerville, 3¼ to 3⅜; Tincroft, 6 to 7; Van, 17 to 18; West Assheton, ⅛ to 1; West Chiverton, 5 to 6; West Pateley, 1¾ to 2¼; Wheal Grenville, 1⅛ to 2⅛; Almada and Tirito, ¼ to ½; Birdseye Creek, ½ to ¾; Blue Tent, 2¾ to 3¼; Cape Copper, 30 to 31; Cedar Creek, ½ to ⅝; Chontales, ⅛ to ⅜; Colorado United, 3⅜ to 3⅞; Don Pedro, ⅜ to ⅝; Eberhardt and Aurora, 4⅝ to 4⅞; Exchequer, 3-16 5-16; Flagstaff, ⅜ to ⅝; Frontino and Bolivia, 2 to 2¼; Hultafall, 3 to 4; I.X.L., ⅛ to ⅜; Javali, ¼ to ⅜; Kapanga, 1⅜ to 1⅝; Last Chance, ⅝ to ⅞; New Quebrada, 1⅜ to 1⅞; Oregon Pref., 1¼ to 1¾; Pesterena, ⅛ to ¼; Placerville, 2¾ to 2⅞; Plumas Eureka, 2¼ to 2⅜; Port Phillip, ⅜ to ⅝; Richmond Consolidated, 10⅝ to 10⅞; St. John del Rey, 280 to 290; Sierra Buttes, 1⅝ to 1¾; Tecoma, ⅛ to ¼; United Mexican, 3½ to 4.

COLLIERIES.—The revival of the coal trade which has undoubtedly set in, and made some progress, has not as yet had as much effect on colliery shares as might reasonably have been expected. Speculation in other stocks, such as foreign and railway securities, has drawn away attention from more legitimate home industries, and hence good colliery shares, which are amongst the best and most promising investments, have unwisely been more or less neglected. The very large consumption of coal as an aid to manufactures of all classes gives special importance as regards the coal trade to the revival of manufacturing industries and to the decided increase in the quantity of iron produced. The blowing-in of old furnaces which during recent bad times have been unused, and the growing production of iron from furnaces already in operation, justifies the belief that a considerable increase will soon be felt in the home demand for fuel, and, as a matter of fact, the demand is already markedly on the increase. To such an extent is this now the case that a comparative check has been given to the quantity of coal exported, and though exports are still on a very large scale the weekly increment which has for so long been observable is now less remarkable in its character. Inland sales are, however, taking place to a more than proportionate extent, though at present prices rule low. Quotations, however, never jump up in a day or two, or when they do it is owing to some temporary and fleeting cause, and on the removal of the cause the effect more than disappears. The slow but steady improvement in demand and prices, therefore, ought to be a source of unmixed gratification, and we fully believe that investors in colliery shares will find it to be so. Colliery owners in South Wales should at all events be satisfied with the development of trade which has rewarded their efforts. From recent statistics a remarkable story may be gathered. While the Northern coal field has scarcely increased its production of fuel at all during the last three years, South Wales shows a growth of production to the extent of nearly 2½ million tons during the same period. Its increase thus exceeds in that time that of any other coal field in Great Britain, and not only is this the case, but, owing to the fact that the South Wales district contains the largest known coal basin in the kingdom, and that it is, comparatively speaking, only just tapped, there is every reason for believing that this great growth of production will continue.

If it be further considered that while our northern coal fields do not contain more than one-third of the coal to be found in South Wales, while the output from the former is even now something like three times that from the latter, it cannot fail to strike everyone that South Wales is destined in the future to be our most important, and perhaps eventually our only source of fuel. Moreover, the veins of anthracite coal in South Wales are especially valuable, and are becoming better appreciated every day, as it is now established beyond dispute that beside their exceptional excellence for iron smelting purposes the anthracite coal is especially suitable as a steam producer. The Ynisedwyn Company, in whose furnaces this coal (of which they own a vast field, of magnificent quality) has been utilised, with the result of turning out some of the best iron produced in this country, may be congratulated upon being in a position to supply a very large demand for anthracite coal at prices which will yield them a handsome profit, and we should not be surprised to see the shares of this company reach a high premium before long. It certainly gives every promise of being one of the most successful as it is undoubtedly one of the most genuine companies ever put before the public.

We are sorry to find from the report of the Ashton Vale Iron and Coal Company that the result of their trading for the year ending June last has been a loss of 1500*l*. This loss appears to have been made entirely on their coal trade, and considering the condition of business during the period, it is not at all surprising. The Pearson and Knowles Coal and Iron Company, on the other hand, show a profit during the same 12 months amounting to 10,825*l*. Advices from Chapel House announce the cutting of the Arley Mine at a depth of 515 yards. This mine is composed of the best house and gas coal in Lancashire, averaging about 5 ft. thick. It is, thefefore, a valuable acquisition to the Chapel House Company, the more so that the company's trade has been so large as to require a supply of coal far in excess of that which it has hitherto been possible to raise. The directors and shareholders are to be congratulated in so thoroughly opening out their property, and there can be no doubt that they will soon realise the full benefit of it. The shares, ordinary and preference, continue to be firmly held, the former at 3 to 3¾ and the latter at par to 5¼. Altami shares are at 3 to 3½; trade has much improved at this colliery during the last few days. All other shares continue quiet:—Cardiff and Swansea, 1 to 1¼; Newport Abercarne, 4 to 4¼; New Sharlston, 3 to 4; Thorpe Gawber, 2¼ to 2¾.

FLAGSTAFF.—There was a decree taken just before the vacation in the actions of Vincent and Snell against the Flagstaff Company and the trustees of the debenture mortgage to the effect that the trusts should be administered under the direction of the Court. That Mr. Harvey being desirous of retiring, it be referred to the chief clerk to appoint a new trustee in his place. All imputations against Mr. Pearson and Mr. Harvey were withdrawn by the plaintiffs in both actions. The adjourned annual general meeting was convened for to day at the offices of the company, but there was not a quorum of shareholders present, which is very surprising, as Mr. Vincent, the Chairman, should have had much to tell the shareholders about his visit to Salt Lake City and the company's mines.

PATELEY—GREAT DISCOVERY.—This great discovery continues of its former reported value—8 tons of lead ore per fathom. Such an ore body has not been discovered for many years, and the result has already been an increased activity in the neighbouring mines.

WEST PATELEY.—This week's report advises an improvement in the 20 fm. level east, on one of the Golden Fleece veins; it has now a leader of lead ore worth 15 cwts. per fathom; and in the 28 fm. level east, the vein—3 ft. wide—has a solid branch of galena of fine quality. Satisfactory progress continues to be made at the other points of operation, which are unchanged. Another parcel of lead will be smelted next week.

TANKERVILLE MINE has not looked so well as now for a long period. The importance of the discovery of lead ore at the 206 fm. level east, where the lode is worth 7 to 8 tons of ore per fathom, may lead to other valuable discoveries in the several upper and deeper levels, as is pointed out in the manager's report of this week.

DERWENT.—A very favourable report appears in another column. The 95, east from Jeffries', is worth 2 tons, and the stopes over the 93 west have also improved. There are now only about 19 fms. of ground to be cut to effect communication between Jeffries' and Westgarth shafts, and lay open the large amount of stoping ground on the middle vein in the great limestone.

YNYS MINE (North Cardiganshire).—The discovery lately made here continues to prove in depth. There is quite a start in all the mines in this district, which may be said to include the Cambrian, South Cambrian, Blaen Caelan, Erglodd, Penybank, Talybont, Tan-yr-Allt, Pensarn, Brynarian, Pwll Romans, all old mines, besides several promising setts. All the above-mentioned mines are now at work, more or less; with what results, a reference to our Mining Correspondence will show.

ENGLISH RAILWAYS, GOVERNMENT BONDS, &c.—INVESTORS and SPECULATORS for the account should DEVOTE ATTENTION to these SECURITIES. Our Selections for 1878 have risen 30 per cent., allowing of profits of 300 per cent. on the small requisite outlay. This is authenticated.
Selections for the season about commencing, and full particulars of Messrs. HUME AND CO., Crosby Hall Chambers, Bishopsgate-street, London, E.C. Enclose stamp.

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A UNITED STATES PATENT HAS BEEN GRANTED to MR. HENRY SEWELL, M.E., for the REDUCTION or ELIMINATION of SULPHUR from Native Sulphur Ores, without Fuel, Water, or Iron Retorts. These furnaces are made of common stone, costing $200 each, and having a capacity of 200 tons of ore, at one time. They last many years. Five of these furnaces can be handled by two men—one by day, and the other by night that is, 1000 tons are worked at one time by two men.
Salt Lake City, Utah Territory, July 17, 1878.

RICHMOND CONSOLIDATED MINING COMPANY
(LIMITED).
NOTICE TO DEBENTURE HOLDERS.
The directors hereby give notice that the COUPONS, due and payable on the 25th September instant, WILL BE PAID on and after that date, at the company's bankers, the Union Bank of London, Princes-street, E.C.
All coupons must be left three clear days for examination.
By order of the Board,
HUBERT AKERS, Secretary (pro tem.)
44, Coleman-street, London, E.C., September 19, 1878.

PORT PHILLIP AND COLONIAL GOLD MINING COMPANY
(LIMITED).
Notice is hereby given, that the Directors have THIS DAY DECLARED a DISTRIBUTION of ONE SHILLING PER SHARE, free of income tax, on account of SIXTEENTH DIVIDEND, PAYABLE on MONDAY, October 14th.
And notice is further given, that the Transfer-books of the company will be closed from Monday next, the 30th instant, till Monday, the 7th October, both days inclusive. By order of the Board,
J. W. PURCHASE, Secretary.
57, Moorgate-street, London, E.C., 26th September, 1878.

INVESTMENTS IN CANADIAN PROPERTIES.
HERBERT C. JONES, M.A., BARRISTER AND ATTORNEY, SOLICITOR IN CHANCERY, 39, ADELAIDE STREET EAST, TORONTO, CANADA.
TO INVESTORS.
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CAPTAIN ABSALOM FRANCIS, MINING AGENT, ENGINEER, AND SURVEYOR, GOGINAN, ABERYSTWITH.
FOUR MINES CERTAIN FOR A RISE.

Notices to Correspondents.

*** Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *filed* on receipt; it then forms an accumulating useful work of reference.

MANUFACTURE OF ZINC—"H. V." (St. Adalbert).—A notice of Messrs. Binon and Grandfils' paper, on the Improvement of the Processes for the Manufacture of Zinc, shall appear in a future Journal.

Received,—"G.C." (Salt Lake City)—"H.S." (Utah)—"S.R."—"H.O."—"H.B." (Stonehouse)—"D. P. M."—"T. J. B." (Belfast)—"Constant Reader" (York)—"W. P."—"Shareholder" (Flagstaff)—"Stannum"—"G. E."—"Shareholder" (Leadhills)—"Constant Reader" (Paris)—"Shareholder" (East Chiverton)—"A Holder of 100 Shares" should obtain the information from the Secretary of the company—"Old Subscriber" (Manchester)—"M. R.": A report from the mine appears in this week's Journal—"H. D." (Leeds)—"W. P. R."—"W. C."—"E. B." (Paris)—"T. H. N." (Middlesborough)—"E. C."

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, SEPTEMBER 28, 1878.

THE AGE OF STEEL.

During the last two or three years, in anticipation of our contemporaries, we have frequently drawn attention to the great increase that has taken place in the production of steel, and the rapidity with which it was supplanting iron for very many purposes that the latter metal has solely been used for. The value of the change from a commercial and economical standpoint has long been patent to our ironmasters, so that the inventions of BESSEMER and Dr. SIEMENS and one or two others have certainly effected a complete revolution in the iron and steel trades. It has been laid down with some show of accuracy that the three stages of civilisation, in this country at least, were represented by the flint weapons as the earliest, the bronze implements as the second or intermediate, and the iron and iron manufactures as the third and latest; but the initiation of the Age of Steel may be said to point to the highest stage of civilisation the world has yet attained, whilst it also marks an era in the history of inventions of the nineteenth century, in which Englishmen have taken the leading parts, and the results of whose genius are shared in by all Europe, America, and in our most distant colonies and possessions. It is, however, since the expiration of the patent right of Mr. BESSEMER that the manufacture of steel has received a truly wonderful impetus, and led to the manufacture of it being commenced on a large scale by persons in Sheffield and other parts of England, as well as by many on the Continent and in America. Iron rails in particular were extensively made in the North of England and in South Wales; but the makers of them have been obliged to alter their mills so as to adapt them for rolling Bessemer rails, which are the only ones that are now enquired for on the part of railway companies at home or abroad—that is to say, to any extent, for there will always be a few iron rails required at least for some time to come. So great, however, has been the home demand for Bessemer rails that our own supplies of hematite ore, from which up to the present time steel alone can be produced, have fallen very far short of what has been required, although the production of Lancashire and Cumberland combined has increased from 1,557,922 tons in 1867 to 2,334 454 tons in 1878. We have, consequently, had to import large quantities of the finest qualities of ironstone from Spain and Algeria, in 1877 to the extent of 1,140,434 tons, whilst last month alone the imports were 149,635 tons, being at the rate of nearly 1,800,000 tons a year, whilst our own production of late has also been increasing. Foreign hematite, of course, is very expensive, owing to the heavy charge for freight and the carriage from the landing port to the furnaces; but there is now good ground for believing that the elaborate experiments that have been going on for some time by Mr. I. LOWTHIAN BELL in particular, having for their object the eliminating of the phosphorus, sulphur, and other impurities from the Cleveland pig will be successful, so that the vast ironstone resources of the North of England can be made available for converting into Bessemer steel. If this should be accomplished then the ore in all other districts can be manipulated for the same purpose, so that steel will be much cheaper than it now is, although it is sufficiently low at present, owing to the competition that exists. But it is certainly a remarkable circumstance that the price of the Bessemer rail is only some 10s. or 12s. per ton more than that of the iron rail, whilst the life of the one is five or six times longer than that of the other, so that the great demand that has grown up for the steel is fully justified on economical grounds alone. But it is not only in rails that Bessemer steel is superseding iron, but in many other manufactures as well, including tyres, axles, wheels, boiler and ship plates, armour-plates, saws, and cutlery, as well as girders, bridges, and other structural works. As to rails the production in England is constantly on the increase, as new Bessemer works are being erected. In America there was an increase in 1875 in Bessemer rails over that of the previous year exceeding 100 per cent. In 1867 the production in that country was only 2550 tons, whilst in 1875 it was 290,863 tons. In France in 1876 the various firms had orders in hand for no less than 300,000 tons of rails, one company having a contract for the Paris, Lyons, and Mediterranean Railway for 75,000 tons. As to their duration Mr. BERNARD, the Engineer to the Northern Railroad of France, states with respect to the Bessemer rails that those laid in Belgium in 1869, on the gradient between Lodelinsart and Mercualle only required renewal to the end of 1874 to the extent of 1 6-10ths per thousand. For shipbuilding steel is now being extensively employed, and last year Messrs. JOHN ELDER and Co., on the Clyde, had an order from the Admiralty for the building of six vessels of that material. At the meeting of the Iron and Steel Institute in Paris a few days since Mr. BARNABY, the Chief Constructor of our Navy, referred to the exhaustive series of experiments that had been made for testing the strength of steel by the Admiralty, and to the decision which had been arrived at of using steel in future for building the ships of the British Navy. Mr. WHITE, an Assistant Constructor of the Navy, also considered steel for shipbuilding to have many advantages over iron, and calculated that a merchant ship of about 5000 tons displacement, if built of steel instead of iron, would be able to carry 320 tons more cargo. The cost of a steel ship, we are also informed, is only about 7 per cent. more than that of iron, but their lightness gives them an advantage in carrying dead-weight freight which fully compensates for the extra outlay. There is also another advantage, as stated by Mr. BARNABY, which is that steel rails last much longer under salt water than iron. For armour-plates steel has been tested on several occasions during the last few months at Portsmouth, at the instance of the Admiralty, and those made by Sir J. WHITWORTH showed great resisting power, the result of high mechanical pressure, which squeezed out the gases and bubbles. Hydraulic pressure, according to Sir J. WHITWORTH, was a most important ingredient in producing steel which should have at least 30 per cent. of ductility, for without it there would be air-cells. There is, therefore, very little doubt but what armour-plates of steel will supersede those of rolled iron. The Government authorities of Portsmouth have also conducted experiments for the testing of hawsers made of steel wire, and the result was that they were found to possess flexibility equal to the best hemp, combined with less weight, greater endurance and hardness, whilst the breaking strain of a steel hawser was found to be more than three times greater than a hempen one.

With respect to railway structures the Committee appointed by the Board of Trade to report as to the adoption of steel for such purposes recommend its employment in engineering structures, the strain in any part not to be less than 6½ tons per square inch. We are also told that a steel bridge of a span of 300 ft. weighs only half what a wrought-iron one would, and yet be able to carry as heavy a load. Of late considerable attention has been paid to steel for boiler-plates, and boilers made from that material have been found more economical than those of iron, requiring considerably less fuel. Mr. D. ADAMSON, the well-known boiler-maker, of Hyde, near Manchester, has made some experiments to test the endurance of iron and steel plates. The result was that, whilst ordinary boiler iron was indented to the fullest extent of the cavity of the anvil and fractured, the best steel stood the same test remarkably well, proving that the mild Bessemer steel and that produced by the Siemens process in endurance and ductility were considerably beyond the strength of ordinary wrought-iron. Steel boilers are, therefore, considered superior to those made of iron, and have received the sanction of Lloyd's Committee, but have to be tested by hydraulic pressure to twice the working pressure. Tyres, axles, and connecting-rods are now being constructed of steel, and are found to be far more durable and cheaper than those made of iron. Wheels are now made of steel more than of any other material, and corves or small trucks used for hauling coal in the underground workings of collieries are also being made of steel. Up to a recent period special qualities of cast-steel have been used in the production of almost every description of cutlery; but experiments have proved that Bessemer can be made so as to meet all the requirements of manufacturers of table, pen, and pocket knives, instruments, and tools of every description. Steel, it may be said, can be made of any quality desired, either hard or soft; but to compound and temper it the leading ingredients of each grade of steel should be known. When this is accurately ascertained then the precise quality of steel that is required for special purposes can be produced to any extent. It may, therefore, be assumed that there are very few articles that have been made of ordinary wrought-iron but what can be produced from steel, which is of far greater strength and durability, and, consequently, in the long run the cheapest. But even some descriptions of castings can be made from steel, and advantageously so. As an instance, we may say that steel ordnance is now being made for our own and other Governments, whilst some remarkable results have been obtained in shells made out of steel, and tested by the French, Italian, and Russian navies: 8 in. and 10 in. shells made of steel, without blow-holes, simply cast, tempered and re-heated, penetrated armour-plates of a thickness equal to their diameter at an angle of 30°. M. GAUTIER, in a paper on the subject of artillery made from steel without blow-holes, considered that artillery could be made from steel without blow-holes as powerful as from the best forged steel or iron, and not much more difficult to manufacture than the old cast-iron and gun-metal cannon. This he afterwards stated had been accomplished at one of the French arsenals. All the experiments made show that where iron has been used for certain products it will LOW have to give way to steel. From the facts we have given as to the many purposes for which steel is now used where formerly iron alone was the material from which they were produced, we think we are justified in considering that we have now fully entered upon the Age of Steel, whilst that of iron is fast dying out; and in this conclusion we are fully borne out by the interesting discussion which took place on the occasion of the meeting of the Iron and Steel Institute at Paris, and in which the leading metallurgists of the day took part, whilst the Admiralty was represented by the Constructor of the Navy and one of the Assistant Constructors. All these gentlemen agreed that the progress of steel had been remarkably rapid, and that it was fast superseding iron in most of the products hitherto made of that material.

INADEQUATE COLLIERY VENTILATION.

In continuation of the series of prosecutions by Mr. Dickinson, Her Majesty's Senior Chief Inspector of Mines, aided by Mr. Martin, the Assistant Inspector of the district, the following cases were heard on Sept. 26, before the County Division Petty Sessions at Rochdale—Jonathan Nield, R. T. Heap, Clement Royds, Esqs., and several other magistrates being on the Bench. The cases were conducted by Mr. Charles Holden, solicitor, Bolton, and the following penalties were imposed:—

Thomas Benjamin Willans, owner of Nutwood Colliery, Wuerdale and Wardle, for not having a plan of the colliery, 5*l.* and costs, and for not providing an adequate amount of ventilation, 5*l.* and costs; also John Shore, underlooker of the colliery, for the like offence as to ventilation, 10s. 6d. and costs; and Abraham Hilton, the person in charge at the time, for not withdrawing the workpeople from the part inadequately ventilated, 5s. and costs, and 5s. and costs for not attending to the ventilating furnace. Mr. H. Brierley, solicitor, appeared on behalf of Mr. Willans and those acting for him in the management.

William Beswicke, agent of Rake Colliery, belonging to the Rake Firebrick Company (Limited), Littleborough, for not providing adequate ventilation, 10s. 6d. and costs; also Thomas Taylor, the person in charge of the colliery, for not withdrawing the workpeople, 5s. and costs.

John Whitehead, underlooker of Elpit Edge Colliery, Butterworth, for not providing adequate ventilation, 5s. and costs; and also another person named Whitehead, the person in charge of the colliery, for not withdrawing the workpeople.

These collieries are all small places, and work what is known as the Mountain Mine. The gas met with is the deadly black-damp, 2 per cent. of which extinguishes light, and between 2 and 4 per cent. proves fatal to human life. In certain working places in each of the mines a lighted candle when set upright went out.

THE DURATION OF OUR COAL FIELDS.

With the returns before us of the quantity of coal raised in the United Kingdom in 1877, we are enabled to carry forward a year in advance of previous notices with respect to the probable duration of our coal fields. The importance of the question has been fully recognised by all our scientific and other associations in which our future industrial greatness has been considered, and has been fully discussed by men of the highest attainments as geologists and experts in connection with the mineral resources of the country. We have never agreed with the alarmists who have fixed a time when our stores of fuel at a workable depth would be exhausted, resulting in the downfall of our manufacturing greatness, and when England, instead of as at present producing powerful engines, machinery, and every description of iron and steel material, would, in metals, be the producer only of trinkets and light work in which no fuel was required. One of the ablest writers on the subject was the late Prof. JEVONS, who pointed out that every improvement for the economising of labour resulted in increasing the consumption of coal, and contended that coal being the source of power, and being required for every great extension of industry, the consumption of it would keep pace with the progress of population and the extension of manufactures. Writing in the year 1865, he anticipated that the production in that year, which was 98,150 587 tons, would go on increasing until, in 1871, it would be 118,000,000 tons. The progressive rate of consumption he appears to have put down at the rate of 3,000,000 tons a year, but the increase so far has been less uniform than that estimated by Mr. JEVONS. Taking the increase at the rate of 3,000,000 tons a year from 1871 the consumption at the termination of 100 years would be 415,000,000 tons, which would only leave us sufficient to last for about 276 years. Mr. PRYSE WILLIAMS, whose views were favourably received by the Commissioners appointed to enquire into the Coal Question, gave it as his opinion that the rate of increase of coal used per head of the population follows a diminishing ratio analogous to that shown by the curve of population. On that basis Mr. WILLIAMS has calculated that the annual consumption from 1871 at the end of 100 years would be 274,000,000 tons, so that taking our estimated supplies into consideration our fields would be exhausted in something like 276 years. Sir W. ARMSTRONG has also given a strong opinion with respect to the duration of our coal fields.

But the estimates of these gentlemen are based on the supposition that the consumption of coal will go on increasing at a certain rate, and allow no margin for probable inventions having for their object the lessening of the consumption of fuel for manufacturing and other purposes. They have not considered that coal gas for lighting our streets is likely to be done away with, or that less fuel is now being used in the production of pig and of steam for all ordinary purposes than was the case only a few years ago. We are certainly of opinion that our known coal fields will last ages beyond what has been laid down by the eminent authorities we have quoted, and we are far from believing that our resources of coal are fully known at the present time, but think it more than probable that fields of considerable extent will be discovered under newer formations than the seams now being worked.

As to the progressive consumption, for many years it has been irregular, for whilst in some years it has fallen off, in others there has been an increase of considerably more than 3,000,000 tons. Only last year, for instance, the increase over 1876 was only 1 265,997 tons, whilst the consumption in 1875 was more than 6,000,000 tons in excess of that in 1874. This shows how impossible it is to fix even approximately the probable yearly increase in the quantity of coal that will be required to meet all our wants, and without taking into consideration our exports, and the probability of their increasing or decreasing. To show how irregular has been the consumption, we give the quantities raised since 1861 to 1878, and as it may be of interest to those interested in the coal trade, we also append the gross value as well as the estimated price per ton at the pits:—

Year.	Tonnage.	Gross value.	Per ton—s. d.
1861	86,419,941	£20,908,803	4 10
1862	81,638,338	20,499,584	5 0
1863	86,292,215	21,573,053	5 0
1864	92,787,873	23,197,968	5 0
1865	98,150,587	24,537,646	5 0
1866	101,754,294	25,407,635	5 0
1867	104,500,480	26,125,145	5 0
1868	103,144,157	25,785,289	5 0
1869	107,427,557	26,856,889	5 0
1870	110,431,192	27,607,798	5 0
1871	117,352,028	35,205,608	6 0
1872	123,497,316	46,311,143	7 6
1873	127,016,747	47,631,280	7 6
1874	125,043,257	45,849,194	7 4
1875	131,867,105	46,163,486	7 0
1876	133,344,766	46,670,668	7 0
1877	134,610,763	47,113,767	7 0

It appears rather singular that for ten years there was scarcely any variation in the price of coal at the pits. The rise only took place at the time of the inauguration of what has been termed the "coal famine." The other figures show, as we have before stated, how uncertain has been the consumption one year with another.

COAL-WINNING IN THE MARDY, SOUTH WALES.

GREAT SUCCESS OF THE SINKING OPERATIONS.

On Wednesday morning coal was struck at the Mardy. A correspondent writes:—It may be necessary to mention that the Mardy is a continuation of the Ferndale Valley, and that the property, which is about 1000 acres, belongs to Locket's Merthyr Steam Coal Company (Limited). It was taken by this company in December, 1877, when the vein known as the Abergorkey seam only was worked. The company on March 10 last commenced operations in sinking, and have won the coal at a total depth, to the Four-foot seam, of 281 yards. The pit is 16 ft. diameter in the clear. The coal just obtained is of excellent quality and of capital thickness, being 5 ft 6 in. in a solid block, and together with the "top" coal makes 7 ft. of marketable coal, which is considered above the average for the Four-foot seam.

The works have been carried out under the direction of Mr. W. Thomas, Bryn Awel, Aberdare, mining engineer, and Messrs. Locket and Judkins, of London, who are the principal owners.

The company are sinking another pit, and it is intended to raise coal from the two pits to the amount of 1500 tons daily. The winding-engines for each pit have two cylinders of 30 in. diameter, with suitable stroke, and all the latest improvements. The pit-heads are being prepared by Messrs. De Bergue, near Cardiff, and are made of wrought-iron, 50 feet high. Waddell's patent ventilating fan is in course of erection.

THE EARLIEST ENGLISH RAILWAY.

The primitive Stockton and Darlington Railway of 1825 has gradually grown into the vast North-Eastern Railway of 1878. Certainly the North-Eastern system is a congeries of lines in which the Stockton and Darlington became absorbed with many of its neighbours and allies; nevertheless, it is none the less true that the Stockton and Darlington was the root and origin of the North-Eastern. As is only too well known, the Cleveland iron trade has been in a very bad way since 1873; matters appear to have gradually gone from bad to worse, and the North-Eastern Railway has been slipping, slipping, slipping back in its receipts, and by consequence in its ordinary stock dividends for the last three or four years. Yet even now it is a grand and imposing concern, and its revenue is that of a small principality. Thus in the six months ending June 30 this year the gross receipts were 2,915,140*l.*; this was a noble result of six months' work, but at the same time the figures exhibited a declension of 143,676*l.*, as compared with the corresponding period of 1877. The falling off in the coaching department was not very serious, but there was a decline of 36,998*l.* in the receipts for goods traffic. The mineral traffic also produced 95,304*l.* less than in the corresponding period of 1877. This last fact forcibly illustates the great and increasing depression of trade in the Cleveland group, but some consolation for the holders of North-Eastern Consols was found in the fact that a restricted mineral traffic involved fewer mineral trains, so that it was possible to effect a very large and important reduction in the mineral traffic. In locomotive power alone the economy realised was 48,322*l.* Under the heading of maintenance of way, works, and stations there was also a saving of 24,991*l.* realised. Carriage and wagon repairs cost 20,969*l.* less, and traffic expenses were reduced to the extent of 20,913*l.* As was to be expected during a period of extreme depression, rates and taxes involved an additional outlay of 10,077*l.*, but the expenditure was smaller during the past half-year under almost every other heading; and, *en somme*, the working charges of the past half-year showed a reduction of 118,631*l.* The consequence was that, in spite of the extreme dulness of the times' the net profit realised for the first half of 1878 still stood at 1,388,639*l.*, as compared with 1,413,684*l.* in the first half of 1877.

The great strength of the North-Eastern in prosperous times, and by consequence the great weakness of the undertaking in seasons of depression, is its mineral traffic. This branch of the company's business produced in the first half of this year 1,080,719*l.*, as compared with 1,176,023*l.* in the first half of 1877; and to accommodate the great mass of traffic represented by these figures the company owned the following stock of mineral wagons at the close of September, 1878:—Coke and lime wagons, 2328; hopper iron wagons, 1557; ballast wagons, 534; 8-ton coal wagons, 4358; large mineral wagons, 24,741; and chaldron coal wagons, 10,847; making a total of 44,365 wagons. The original promoters of the Stockton and Darlington Railway can scarcely have imagined that railway mineral traffic would ever have attained in the north-eastern counties to the dignity of such imposing figures. The North-Eastern Railway has indeed expanded into a concern of well nigh bewildering magnitude, but at the same time the fact cannot be overlooked that just when it had grown into an astonishing importance and prosperity the undertaking has witnessed a very serious collapse of the industries upon which it has very largely to rely for its revenue. In the current half-year the North-Eastern has unfortunately experienced a still further decline in its business.

MANCHESTER STEAM USERS' ASSOCIATION.—At the last meeting of the Executive Committee of this Association, held at the offices, Mount-street, on Tuesday, Mr. Samuel Rigby (Warrington) in the chair, Mr. L. E. Fletcher, chief engineer, presented his report, which gave particulars of visits of inspection, and a record of boiler explosions from May 25 to Sept. 20. Between these dates 1651 visits of inspection were made, and 2938 boilers examined, 1765 externally, 37 internally, 10 in the flues, and 1126 entirely; while in ad-

dition 20 boilers were tested by hydraulic pressure. The total number of defects discovered was 421, 11 being dangerous. Ten explosions, killing eight persons, and injuring 14 others, occurred between May 25 and Sept. 20 inclusive. Not one of the explosions referred to arose from boilers under the charge of the Association. "The result of the examinations made confirms with monotonous consistency the conclusions previously arrived at—that explosions are not accidental, that they arise from no mysterious cause, or from the development of previously unknown forces; but that, destructive and violent as are the results, they are due in the majority of cases to the use of weak boilers, the boilers in some cases having been weak to begin with, and in others weakened by wear and tear, the plates frequently being found to be wasted away by corrosion till no thicker than an old sixpence. Under these circumstances explosions cannot correctly be termed accidents. Competent inspection would prevent them. There is no excuse for such a constant sacrifice of human life, and it would appear incumbent on the Government to insist upon the exercise of due precaution."

TIN-PLATE TRADE.—We notice with great satisfaction that the tin-plate manufacturers held a meeting at Swansea on Thursday, when it was unanimously resolved to limit the output. The arrangement is that the men shall begin work at six o'clock on Tuesday mornings, and leave the tin-house at six o'clock on Saturday mornings. This alteration is to be in operation for twelve months from Nov. 1. A secretary was appointed, who will act as inspector to see that the arrangement is faithfully carried out at the various works. We have some hopes that the mineowners generally will follow this example, and limit the output of the various ores which they produce. It must be manifest to all producers of copper, lead, and tin ores that they are raising and selling them at an immense sacrifice. We are endeavouring to obtain some accurate statistics as to the production of the different metals of the world 40 or 50 years ago, and as to the consumption also, and hope to be able to publish them shortly. The increase of both is very great.

WHITSON MINE.—Mr. Hext Boger (Messrs. Bewes and Boger, of Stonehouse, Devon) desires, as steward of the Earl of Mount Edgcumbe, that it should be distinctly stated that no lease or agreement in connection with the Whitson Mine has been either granted or promised—an advertisement to the contrary having been published in the *Mining Journal*.

PARIS EXHIBITION.—Messrs. Salmon, Barnes, and Co., of the Canal Head Foundry and Engineering Works, Ulverston, have, we understand, been awarded honourable mention for the patent Roanhead Rock-Drill. Also the highest award—a silver medal—for revolving shutters iron and wood, worked by their patent balance weight motion.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Sept. 26.—There is scarcely anything fresh to note with regard to the explosion at Abercarne, so terribly fatal in its results. The list of dead now stands at 265. When the bodies can be got at no one can surmise. Pumping operations have failed, owing to the choking up of the bottom cistern with rubbish, &c., and although a diver has been sent down nothing could be done in this direction. The water is being wound up in tanks. Assistance is coming to hand from all parts of the country, and the Mansion House fund already amounts to some 16,000*l.* The local committee are serving out relief according to a scale agreed to, but there are many hundred men thrown out of employ, and the distress among these and their families is considerable, for only a small proportion can find work. The local colliery proprietors' association, meeting at Cardiff, have voted the sum of 1000*l.* towards the relief fund. At this meeting the question was raised as to the desirability of establishing a permanent relief fund, which could be fallen back on on occasions such as the Abercarne disaster. The representatives of both masters and men seem to agree with the proposal, and it is to be hoped that so excellent a one will be carried into effect.

There is a movement on foot among colliery proprietors in Aberdare and Merthyr Valleys to connect their districts with Newport by a more direct route, and it would not be surprising to find that Parliament will shortly be appealed to to grant powers for this purpose.

The position of the Iron Trade has but little changed; the demand has not improved, and in many cases buyers hesitate before accepting orders on account of the exceedingly low prices which they obtain. The clearances during the last few days have a trifle improved, and a parcel of about 1500 tons has been sent to India; still the works are not quite so well employed. There has lately been a rather better, but still limited, demand for bars. The reduction in price by Staffordshire makers will probably have no effect, so far as this district is concerned, the reduction only applying to first-class description of bars being conceded as much as anything, with a view of regulating wages. Pig-iron is a trifle more in favour of buyers. There is a tolerably good demand for Bessemer steel.

The Tin-Plate Trade has not materially altered, but it is satisfactory to state that the dispute at the Vernon Works, Briton Ferry, after having lasted about three months, has ended at last. The men will shortly resume work.—[At a meeting of the South Wales and Monmouthshire tin-plate manufacturers, held at Swansea on Thursday, it was resolved to reduce the number of working days per week to four, the arrangement to continue in operation for 12 months from the first Monday in November. A reduction in the make of tin-plates will thus be brought about. A secretary was appointed, who will also act as inspector to go round the works to see that this arrangement is faithfully carried out. The proceedings were marked by the greatest unanimity.]

The Coal Trade does not present a very cheerful aspect. Prices are low and not so firm, freights are low, and business is rather unsettled. The demand for steam coals, which has been tolerably well kept up throughout the long depression, is not so good, and foreign shipments have not been quite so large. The output is still considerable. House qualities are in poor request, but are rather better enquired for. Patent fuel is inactive.

COAL WINNING AT MOUNTAIN ASH.—At the Penrhiwceiber Navigation Sinkings, Mountain Ash, the celebrated "Aberdare Four-Foot Coal" has, after six years unabated perseverance, been won at a depth of 525 yards. The thickness of the seam where cut at Penrhiwceiber is 7 ft., and the quality is in every respect equal to that portion of the seam so extensively worked at Messrs. Nixon's Navigation Colliery. The proprietors of the new colliery are Messrs. Cory Brothers, of Cardiff; Messrs. Cory and Yeo, of Swansea; Messrs. John Glassbrook and Son, of Swansea; Mr. T. Coats, of Paisley; and Mr. H. Matheson, of London. Great credit is due to these gentlemen for the spirited manner in which they have carried out the undertaking to a successful issue, notwithstanding the enormous difficulties they have had to contend with as regards water and pumping power, as well as depression for some years past in the coal trade of the district. They persevered, and at last their efforts have been crowned with the success which they so well deserve. The pits were commenced in July, 1872, and until stratified ground was reached were strongly secured by timbering down to the depth of 22 yards. Before a depth of 80 yards in the pits had been reached the water difficulties, which have been the chief obstacle in these sinkings, had commenced, and had increased to 180 gallons per minute. This large quantity was dealt with by carefully walling it back by means of concrete, cement, and 18-in. brickwork; and to a great extent the experiment was successful, as when the wall was plugged not more than about 25 gallons was found to escape. At the depth of 200 yards a very abundant spring was struck, averaging some 36,000 gallons an hour. Some time was now occupied in putting in pumping gear to deal with this accession of water. The energetic local manager, Mr. David Thomas, who had successfully superintended the work from near the start, had from the beginning advocated that tubbing should be adopted to dispose of sectionally all the large feeders met with, thus getting rid of the water from time to time, at once and finally. Mr. Glasbrook, one of the leading proprietors—in whose name, indeed, Messrs. Glasbrook and Co., the firm is locally known—together with Mr. T. Thomas (of Cardiff), the company's present consulting engineer, was deputed to pay a visit to Barnsley, Yorkshire, to inspect similar work there, and from their report the owners decided to put in tubbing in that part of the North Pit where the water was found. A length of about 28 yards manufactured by a local firm—Messrs. Parfit and Jenkins—from the desings and drawings of Mr. T. Thomas. The tubbing, one of the strongest ever used in South Wales, was capable of resisting a pressure of 300 lbs. per square inch. The entire fixing of it in the pit was entrusted to Mr. John Easton, of Durham, who was expressly engaged for that purpose by the company, as they had no local man at the colliery who had had any experience whatever in this class of work. During the progress of this work the whole of the feeders in both pits reached a volume of some 57,660 gallons per hour. To cope with this there was one 70-in. Cornish engine and a direct-acting pumping-engine of 47-in. cylinder, which did capital service, and in addition to these a special connection was designed by the manager, Mr. D. Thomas, now certificated manager, to utilise the splendid pair of 45-in. winding-engines, recently erected by Messrs. Harvey and Co., of Cornwall, for temporary pumping purposes. The large pumping-engine and the arrangement of pumps in the pits were erected from plans prepared by the manager, and his general setting out of the surface arrangements was approved of by the directors. Mr. John James, of Treorki, pit contractor, carried down the workings from the No. 3 seam. The surface arrangements and other work are now being rapidly pushed forward, with a view of getting a large output of coal as quickly as possible, all of which is now, and has been for some time past, under the personal supervision of Mr. T. Thomas, of Cardiff.

REPORT FROM CORNWALL.

Sept. 26.—If the unfortunate news from the East—that is to say from the far East, from India—is confirmed in all its bearings, who will be bold enough to say that, in spite of all our hopes to the contrary, there may not be a lower deep for Cornish mining to touch than any it has yet reached. A little war with Afghanistan might be a matter of little consequence, but a big war for the maintenance of our Indian Empire would be a very different thing, and would lead inevitably to a very serious renewed depression in trade ere we have fairly recovered from that under which we have so long been suffering. Here, however, we can only hope for the best. We have learnt by this time, or at any rate those of us who needed the lesson, that whatever else war may be good for it is not good for our peculiar interest.

Apart from this untoward tidings there do seem to be a few brighter streaks on the horizon. We have to wait as yet for performance, but there is something at least in the way of promise. In the natural course of events, and apart from any speculative results, it is impossible to imagine that there will be any further recession in the prices of tin, and that being so we know that whatever fluctuations come must be upwards. This is a time, then, in which holders of shares and of st cks should alike be wary.

There have been few more encouraging statements of late than those made by Mr. Robert Hunt. F.R.S., the founder of the Miners' Association, at the very successful annual excursion of that society to Wheal Sisters and its neighbourhood. Mr. Hunt, it will be recollected many years ago, predicted the increased richness of mines in depth, which Dolcoath is so wonderfully proving, and his position as Keeper of the Mining Records enables him to speak with peculiar authority. Speaking of the results of the working of the Association he said, "It proves to me I am not wrong in believing if the mining interest is to be rescued from the present low state to which it has fallen it will be done by the introduction of science among the miners, and of the application of science to mining and the process of mining. We are passing through a very dark period in this county; and, indeed, the experience of every mining county in England is the same, but, depend upon it, that dark period is not to last for ever. The darkest hour is just before the dawn. I am not prepared to say for a moment—because I think the evidence would be against me—that the tin mining of Cornwall is to revive suddenly. When we see what the Cornish miner is doing abroad in the discovery and development of tin mining, we must certainly feel that for a long period to come the only hope for Cornwall will be in endeavouring to reduce the cost of the production of tin by the application of science to the economical working of mines and to the dressing of the tin ore when it is brought to the surface. I am one of those who are old-fashioned enough to believe that this world, not merely the physical, but the moral, is governed by a Law-giver, and is carried on by a system of laws. As we find that the mean annual temperature of the earth is regulated by certain phenomena which are going on in the sun, and that the magnetic force of the earth is, mysterious as it is, also regulated by the number of black spots we see on the sun's face, and when we know that such physical laws are linked together in a marvellous way, we must admit there is over all a Law-giver. Now, that Law-giver who governs the physical conditions does not neglect the moral condition of those creatures who were made in his own image. Let us not despair then, but put our shoulders to the wheel, work on willingly, earnestly, honestly, and the time will come when the mining interest of Cornwall will again be brightened, and a flood of prosperity will be poured in on the county such as it has not enjoyed for a long time. I can only say, and particularly to my young friends here, that they will find it to their interest by all means in their power to acquire knowledge, for, as Bacon told us years and years ago, knowledge is absolutely power, and in no case is that truer than in a great industry such as that of mining. We see now that gradually, but somewhat slowly, the boring machine is being introduced into the mines for the purpose of relieving the labour below the surface, and also for the purpose of cheapening and hastening the process of driving. We see here and there, not to the extent I could wish to see it, that improvements are taking place in the dressing of ores. There is no one point upon which the applications of science are more required than in the process of tin-dressing, notwithstanding all the improvements that have been made. We know upon one or two principles—the laws of specific gravity and the motion of fluids, two simple matters which are easily understood and not difficult to learn—depend the economical separation of black tin from the matrix with which it has been associated. A little study of the mechanics of these forces will throw a wonderful deal of light on these matters. The youngest man present can study with ease and without cost the rate at which a body will move in water, the rate at which a body will sink through water, and the force of water to move a pebble. Upon these points depend the improvement and perfection of tin-dressing.

There is an amusing side to everything, and among the amusing things that cropped up at the excursion were some jokes at the expense of the "out 'venturer," who has, however, so very frequently had to pay for his blunders that he deserves rather our sympathy. Still it is a pity that the fate of a mine should so often be in the hands of those who know no more about mining than many "foreigners"—we use the term in its technical sense—do. Among the good stories told were these: Hearing that a new shaft was to be sunk a London shareholder asked if they could not buy a second-hand one somewhere. Being told that the sett was a mile long and half a mile wide another adventurer desired to be informed how deep it was. A third adventurer visiting his property saw "deads" or waste being hauled up the shaft, and he ventured to denounce this as a useless waste of time and labour: why didn't they dig holes underground to bury the waste in!

To turn to a very different subject. The stoppage of South Crofty, which little else than a miracle can now avert, is one of the greatest discouragements to mining enterprise that we have had for a long while. North Crofty went years ago; ere, in fact, the pinch had fairly began to be felt, but South Crofty has made a gallant fight, and that it should now have to give way is really sad. The mine is a good mine, with great prospects, but the adventurers are tired of their long battle with adverse circumstances, and unless something unexpected intervenes will struggle no longer. By the side of this, the stoppage of Great Work, though serious enough in itself, is a very small matter.

West Basset is wise; it is not our business—here and now, at any rate—to pronounce upon the respective merits of different drills. Rather are we inclined to say with Mr. R. Taylor that there are several excellent drills in the field, and to hold that the more of them that are tried the better. The Eclipse drill, too, is an excellent one, as was proved by its trials at the Polytechnic, and has been well proved in actual work elsewhere; and good work may be expected of it at West Basset. We have come to a time when no mine can fairly be expected to hold on its course to the best advantage unless it adopts all the best helps to its economical prosecution, and among the most important of these is the boring machine.

There is a new and serious change it appears attaching to the use of explosives; at any rate, if the following extract from the proceedings of the Camborne local board is to be taken as any indication:—"Mr. Holman states that as his man was driving a horse and cart down Charkey-lane the horse stepped on a dynamite detonator, which exploded, slightly injuring the horse in the throat and knee. Happily the man had tight hold of the reins, or the consequences might have been serious. He wanted to know if some restrictions could be enforced by the mine managers to prevent the miners carrying these dangerous explosives about with them?—Major Pike: Why the other day my groom picked up nine of these detonators which were lying on the ground just outside the Tehidy office. It is a common thing for the miners to carry about these things loose in their pockets until they require them. The pocket gets worn, and out they drop.—Mr. Bishop: At this rate, it will be a dangerous thing to measure a miner for a pair of breeches, and the tailors of the town should have a caution.—Mr. Bolden was of opinion that the clerk should write to the managers of the neighbouring mines, and ask them to endeavour to prevent the men from taking these or other dangerous explosives off the mine." It is to be hoped that this plan, which was adopted, will have some result. It is quite certain that there is a great deal of carelessness in dealing with these dangerous articles.

The West of England Compressed Peat Company have begun their proceedings this week by cutting the first sod of a branch railway, which is to connect their peat grounds, held under lease from the Duchy of Cornwall, with the South-Western Railway. The new line commences about a hundred yards on the northern side of the Bridestowe Station. From this spot the new railway will take a winding course up a gentle acclivity, and then gradually round Great Links Tor, at the other side of which the peat is situate. The railway will be between three and four miles long, and it is estimated that it will cost about 6000*l.* In the course of the proceedings Mr. Head, the secretary of the company, said that when the railway was made they would have direct communication with a source of wealth to the county of Devon of which, perhaps, no one present had a due appreciation. When he told them that there were 20,000 acres of peat on Dartmoor they would understand that their railway would only touch the fringe of the deposit. Should their undertaking prove a success such was the demand of the country for cheap fuel that a hundred competitors could do them no harm. They already had many orders for charcoal, among them one for the supply of the Royal Arsenal at Woolwich, so that the Government had already begun to appreciate the advantages of the undertaking. It was also stated that there was enough peat on Dartmoor to supply the United Kingdom with fuel for a century if the whole of the coal was exhausted. This is rather a startling estimate; but there is no doubt that the quantity of available peat land on the moor is very large, and that this new undertaking is launched under very encouraging auspices.

TRADE OF THE TYNE AND WEAR.

Sept. 25.—The Coal Trade has been in some branches extremely dull during the past week, with the exception of the gas coal trade, which continues brisk. There are also signs of a slight revival of the house coal trade as winter approaches, but the demand for all second-class coal is still insufficient to keep the works in general fairly employed. In Durham only the best gas and house coal works are fully employed, and others are worked from three to five days per week. The shipments of coal and coke at the Tyne Docks have been about the average. The state of the miners at many works in Northumberland is deplorable, as in some cases only one day per fortnight has been done, and this really brings the men to the borders of starvation. Subscriptions have, indeed, been opened at Shire Moor and Holywell for the purpose of raising funds to support those who are in want.

The Miners' Association in Durham is in danger of falling to pieces; the men, who are unemployed, or nearly so, being unable to pay the subscriptions, and they are leaving the society in large numbers. Those payments are indeed so heavy that all the men find the burden almost intolerable. There is no doubt that this state of affairs has been brought about by various causes, but the chief are the bad state of the coal and iron trades during the past year, and the course taken by the executive of the Union in supporting the men thrown out of employment. This has disposed of the greater part of the funds held by the Union, and it must be considered a rash proceeding, as the support of men out of employment is always liable to abuse. This course has been acted upon by all the miners' unions in this district, and it has certainly saved the ratepayers many thousands of pounds. The mechanics at Seaham Collieries, belonging to the Marquis of Londonderry, struck in consequence of a demand made for an increase of their working hours, but this only continued two days, when an arrangement was made. The men have conceded the demand, and this will decide the question so far as Durham is concerned; indeed, the change has been pretty generally effected already.

The Lead Trade in Teesdale continues in a very depressed state, and over 100 miners have been discharged by the London Lead Company, who have determined to cease exploring, and will only continue to work proved veins. It is expected that many of the young men will emigrate. Emigration still goes on from the whole of this district, but not on a sufficient scale to relieve the labour market to any great extent.

The gathering in the Exchange at Middlesborough, on Tuesday, was very little, if any, better than last week, and there was a listless feeling about trade, very few being disposed to engage in new transactions to any extent. The tendency downwards of rates of pig-iron mentioned last week has been confirmed, and the regular quotations do not exceed—No. 1, 42s. 6d.; No. 3, 39s.; No. 4 forge, 38s. to 38s. 3d., less 1 per cent. The merchants are selling amongst themselves at 3d. to 6d. per ton less money. Makers, however, do not, unless in a very exceptional instance, take less than their quotations, whilst some ask rather more. On the whole the shipments of pig metal have kept fairly good, and as the end of the month is now approaching conjectures are being made as to the probable position of stocks. Generally, however, there is an impression that there will be a substantial reduction, as there has been no slackening of operations at the local finished ironworks, whilst sea deliveries have kept good. There has been no interruption to the regularity of work, as was the case during August. Taking the returns, however, as being of the most satisfactory character, it is deemed to be too late for any effect to be exercised in the direction of improvement in the market. Buyers know that there is plenty of iron in reserve, and if any extra stiffness were, therefore, attempted to be imparted it would probably fail. Merchants are so far recognising this fact that they are selling forward to the end of the year at about present rates, and at about 1s. in excess for a large portion of next year. There are, however, no very ready buyers. Taking the ship-plate trade, it is not so promising as was the case. Manufacturers in general are pretty well booked till the end of October, and some till about Christmas. The future will altogether depend upon the iron shipbuilding trade, which cannot be pronounced upon, the demand for new vessels being contingent upon such a variety of circumstances. Ship-plates are not so strong in price, and can be placed at the old figure of two months since, 6*l.* 2s. 6d. There is no change in bars or angles.

The Royal Society for the Prevention of Cruelty to Animals has-

ing offered 400*l.* in prizes for improved railway cattle trucks, the judges in June last inspected 55 competing models, and selected four, which they requested the inventors to build of the full size, in order that, if necessary, a practical trial of their capabilities might be made. Three of these trucks have now been completed, and one inventor has been allowed further time. An inspection of the three trucks has since been made. One of them was exhibited by Mr. Hasswell, of Gateshead. It is roofed, and provided with laminated buffers, draw springs, and axle springs. Small racks for hay are arranged like a continuous cornice all round, the hay being introduced through flap lids in the roof, which protect it against sparks from the engine. Water troughs are placed along the whole of each side, including the doors, and project about 5 in. within the framing and 5 in. outside. The aperture through which a bullock has to drink is 12 in. high. The supply of water is placed in a tank forming the roof of the truck. But the addition of, perhaps, 1 ton of water to the 4½ tons weight of each cattle wagon in a train would manifestly add greatly to the non-paying load, and very seriously reduce the carrying capacity of an engine and train. Although it is understood that the North-Eastern Railway Company view this truck with favour, and might be prepared to adopt it, the judges decided not to continue it any longer in competition.

A series of experiments with Kendal's continuous steam-brake was made on the North-Eastern Railway on Monday. Amongst those present on the occasion were—Mr. Edward Fletcher, locomotive superintendent of the North-Eastern Railway; Mr. John A. Haswell, assistant locomotive engineer; Mr. Horatio Fletcher, assistant locomotive superintendent; Mr. George Kendal, locomotive department; Mr. John Bowran, head of the running department; Mr. Ramsey Kendal (late of the North-Eastern Railway), the patentee; Mr. Harrison, passenger department; Messrs. Bell, White, Heads, Clovis, Elliott, and others. The results were regarded as very satisfactory by the officials who witnessed them. The brake is worked by a steam-cylinder, with suitable connections to the carriage brakes, so as to obtain an almost uniform breakeage throughout with a rapid application.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Sept. 26.—The reduction in marked iron has had the effect of increasing the trade of the houses making that class of product to the extent of the receipt of orders which before the drop were going to second-class houses. Some few contracts have also been placed by merchants at a distance that had been withheld. The Earl of Dudley's bars now range from 8*l.* 2s. 6d. up to 13*l.*, rivet iron from 10*l.* 10s. up to 14*l.*, T iron ranges from 9*l.* 2s. 6d. up to 14*l.*, angle from 8*l.* 12s. 6d. to 13*l.* 10s., the general sizes of strips and hoops from 9*l.* 2s. 6d. to 14*l.*, and those of ¾ in., and not thinner than 20 w.g., vary from 11*l.* 2s. 6d. up to 16*l.*, according to quality. Messrs. J. Bagnall and Sons bars are 7*l.* 10s., their hoops 8*l.*, and their plates and singles 9*l.* Plates of the Monmoor brand (E. T. Wright and Sons) are priced from 9*l.* up to 12*l.*, sheets of the same brand are from 8*l.* 10s., for singles up to 10*l.* 10s. for double best, bars from 7*l.* 10s. to 9*l.* 10s., and rivet iron from 9*l.* to 10*l.* The firm attitude of the Shropshire finished iron houses, and the declared inability of the second and third class Staffordshire iron houses to make concessions, tend to check business in other than marked iron, and orders are being largely withheld until the quarterly meetings on the 9th and 10th of next month. Pig-iron sellers quote their prices the same as before, and trade is inactive. House coal in rather better demand, but the manufacturing fuel trade is unimproved.

A deputation consisting of the miners' delegates has this week waited upon Mr. E. Fisher Smith in his capacity of chairman of the Coal Masters' Association upon the question of wages. Mr. Smith pointed out the utter improbability of any increase at present, but intimated that if the collieries would work an extra hour per day an increase of 6d. per day might be granted them, or if an hour and a half an increase of 9d. The deputation rejected such a proposal, and after thanking Mr. Fisher Smith for their reception, withdrew.

The arbitrators under the South Staffordshire Mines Drainage Act propose to make a draft Mines Drainage award for the Old Hill district. They estimate that the rate required will be 3d. per ton on fire-clay and limestone, and 6d. per ton on ironstone, coal, slack, and other unmentioned mineral raised in the district, except that portion which consists of the mines on the south side to the River Stour.

Coal and iron properties show little spirit on the local Stock Exchanges. The great Sandwell Park Colliery is steadily gaining a better position; the most recent sale of this concern's shares was at 6½ premium. The Cannock and Huntington Colliery property is quoted by sellers at 9 dis.; would be buyers of Pelsall Coal and Iron Company's shares stand at 13 dis. Sellers in the Chillington Iron Company ask 3*l.* 5s. for the 10*l.* shares, and there are offers at 3*l.* The amount paid on John Bagnall and Company's shares now figures as 3*l.*, as per the new arrangement. Transactions have lately been recorded in them at 17s. 6d., but this week 15s. has been the price. There is some doubt whether the scheme for the reformation of this company will be floated consequent upon the difficulty of getting the new capital taken up.

As I last week intimated it would, the strike in the wrought nail trade has now ended by the men in a body resuming work upon the employers' terms. The struggle lasted over ten weeks, and affected a total of some 20,000 operatives.

The Hanley Stipendiary has this week sentenced a miner employed by the Chatterly Coal and Iron Company to 14 days imprisonment, without the option of a fine, for uncramming a shot. At the same time, two other miners in the employ of the company were fined for less serious infringements of the Mines Regulation Act.

There is this week a fairly steady demand at the North Staffordshire collieries, and house-fire coal shows improvement. The question of the size of riddle to be used in screening the coal is causing some little unrest at one or two of the collieries where fresh arrangements are being entered into. The iron trade, both in the pig and finished department is without change.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Sept. 26.—Many of the readers of the Journal will, with myself, be obliged to Mr. P. Williams for his courteous and sensible explanation of the occurrence of the newly-discovered ore at the Ynys Mine, which is, I presume, the old Taliesin. As I surmised, it is not in a true north and south lode itself so much as at the points where this is intersected by others more or less east and west that the ore is found. It is not in Cardiganshire alone that north and south lodes are usually commercially unproductive, but the phenomenon is universal, so far as my experience and enquiries are concerned; and while it is quite possible that such a lode may be found with a considerable amount of ore, the working of such is attended with greater risk than is the working of ore-bearing lodes of a general east and west direction.

Mr. Robert Knapp might have answered my simple question, which was outside of correspondence between him and "Engineer," without losing his temper. I have great respect and sympathy for mining men working under difficulties, and I have needed such sympathy myself, but the Llanrwst Company is a public company. Great promises were made and strong inducements given to investors, and it is only right when such promises have not been fulfilled for a paper devoted to mining interest to ask the reason why. If the reason is good then it is well, and everybody is the better for the explanation, if it is not good it should also be known. Therefore a simple enquiry should meet with a simple and courteous reply. Perhaps I do know the mine, at any rate I would suggest that even at the present low price of lead it might be wise with such reserves as those described to keep at least the stamps, whose capacity is not very large, steadily going.

Turning to Carmarthenshire, the old mine of Llanfyrnach deserves a word of praise. Under the management of Capt. Rhys new discoveries of ore have been made, and last month the production of the mine was 70 tons. Better machinery would give larger returns. This mine is situated on the Whitland and Taff Vale Railway, which is now being extended to Cardigan. About 30 men are at work at the Crymmach Arms end, and 8 or 10 at the Cardigan end of the proposed line. The station is, it is said, proposed to be built above the bridge, but the people of Cardigan should by all means secure a siding down to the port, which should be cleared and made available for the slate traffic, which is sure to grow. The Glogue Slate and Slab Quarry, on the railway just referred to, is doing a good trade, and some dozen loaded railway wagons are taken out of its sidings daily. Two younger quarries, on the same run of slate—the Pencellyn and Elgyn Valley—are also opening out rapidly and well, and being connected with the railway. In North Wales among the signs of greater activity is the reopening of the Orsedd or Penyrorsedd Slate Quarries, near Carnarvon, which have been closed owing to the dulness of trade. Messrs. Darby and Robertson, of the Brymbo Colliery, have subscribed 200*l.*, which has been met by 200*l.* subscribed among the men, for the establishment of a cocoa and refreshment house. I would caution colliery proprietors against accepting the orders of men representing themselves as coal merchants in the outskirts of Birmingham without due enquiry. Though not apparently acting in concert their proceedings are of the "long firm" description, and references supplied will be deceptive.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 26.—Very little change has taken place in either mining or manufacturing since my last notice, and trade generally appears to be quiet. In the lead districts business appears to be going on satisfactory, and the output of ore has been kept up to the average. A few weeks ago it was considered that there had been quite a revival in the iron trade, and one that was likely to go on improving; but such has not turned out to be the case, for it is still in a very languid state, and holders of stocks who a short time since held back are now not unwilling to sell at current rates, low as they certainly are. There has, however, been no diminution in the production, which goes on as usual, so that the imports of Northamptonshire ore by the Midland are well kept up. The foundries are by no means so busy as they have been, and at some of the largest concerns the number of hands has been decreased, whilst at one place the men are not fully employed. Nail making in the Belper district has improved of late, but the wages are very low, and it is expected that the men will shortly ask for an increase, so as to be put on equal terms with other districts engaged in the same description of work. Malleable material is in but moderate request, but the Bessemer rail establishment at Dronfield is still active.

Several of the collieries are now more fully employed than they were, an increased business being done in house coal for various markets. To London the traffic over the Midland has improved, and the tonnage sent from several of the largest collieries contrasts favourably with the corresponding period of last year, Steam coal is rather quiet, excepting as regards the local consumption for the blast-furnaces and railway companies, as the shipping season to several ports of the North of England is drawing towards a close. In common small coal, as well as in engine fuel, there has been very little change of late, the depression in many branches of trade causing the consumption of the latter in particular to be but moderate.

In Sheffield trade generally is still dull, and there is not so much doing in several branches as there was a couple of months ago, for it was then thought that the current had set in in a different direction to what it has been, and that the long-looked-for change for the better had really taken place. But this has not been the case, for in some departments less is being done than in the summer, so that a good many workmen are on short time, and the mills running less hours. The Government orders for armour-plates are being fast cleared out, and it is said are not being replaced, so that there is not the same activity in this important department that there was a few weeks since. A steady business, however, is being done in ship and boiler plates, whilst hoop iron is also in better request. In heavy forgings quietness still is the ruling feature, as it has been for a considerable time past. The foundries have been working steadily, but they are by no means busy, a good deal of the work required for builders for summer having been cleared out. Bessemer steel is being largely produced, whilst the output of rails of that material keeps up very well, but contracts owing to the competition have had to be taken very low, many of them being at the rate of from 5*l.* 12s. to 5*l.* 15s. per ton, which leaves only a slender margin of profit. But as the quality made is large the makers may be said to be better off than most others in the town. Cast-steel is quiet, but makers of wheels and axles are actively pushing them forward amongst colliery owners and others, but the orders given out are but of moderate extent, as few will do more than take what they are obliged to do for immediate requirements. Bessemer steel, too, is interfering very much with the ordinary cast-steel, as it has been found that it can be produced of a quality suitable for cutlery and other purposes, for which the cast material alone has hitherto been used, In general cutlery some of the principal houses are working steadily in the better qualities of goods, but there are many manufacturers who are unable to find full employment for all their hands, and in some instances the stocks held are considerable, whilst the expectation that Cyprus would be a good market for our hardwares has not been realised, for large stocks sent out there have not been sold even at prices that would not more than repay the cost and freight. The coal trade of South Yorkshire is about the same as it has been during the last two or three weeks, there having, however, been a slight increase in the business doing in household qualities. The business doing with the Metropolis has not improved, seeing that the rate by the Great Northern is such as to give an advantage to other lines connected with extensive coal fields. There has been a decline in the exports of steam coal from the Humber, whilst the time is fast approaching when shipments to the Baltic will be brought to a close for the present year. At the Nunnery Colliery, where the men are on strike and a number of non-Unionists employed, there has been one or two disturbances during the week, the Union hands considering that as they will not work on certain terms none others shall, but the powers that be have been too much for them.

Several strikes are still running their ordinary course, and many miners have been obliged to leave the houses they occupied under their late employers. At Dodworth Silkstone the men are still out, and likely to remain so, and the same may be said with respect to Wharncliffe Silkstone, and two other collieries in the same district.

PROPELLING TRAM CARS.—At one or both ends of the vehicle, at the stage upon which the driver stands, Mr. L. N. NATHAN, of Coleman-street, places in suitable bearings a wheel; this is the main or driving wheel. This wheel is furnished with recesses to receive the links of a chain, or it may be fitted with projections to receive the links of the chain. Upon the driving or foremost axle is placed a wheel of smaller diameter than the first-named, and the two are connected by means of an endless chain. The axle hereinbefore named and the other axles are provided with wheels of a similar kind to that just named, and these wheels on each side of the vehicle are connected with endless chains. It will thus be obvious that upon applying manual power by means of crank handles or wheels with outside spokes such power will be communicated to the axles, and thereby propel the vehicle and dispense with horse power. The driving wheel may be operated, if desired, either by gas, steam, hydraulic, compressed air, or other motive power.

OBTAINING MOTIVE POWER.—In constructing and arranging mechanism whereby they are enabled to drive machinery at a great reduction in cost Messrs. DRAKE and WATSON, of Lightcliffe, near Halifax, propose some improvements which consist in the use of a chest or box, within which is a rocking shaft having two or more crescent-shaped or segment levers thereon. One end of shafts or rods are attached to these segments, the other end being connected to cranks for giving rotary motion to shafts for driving or turning machinery. A bridge or cover is placed within this box for the segments to work underneath, and when steam, water, or air is admitted into the said box this bridge prevents the steam or other media from pressing on the surface of the segments; a certain portion only is exposed to the action of steam or other media, such exposed portion being determined by means of a slide or shield also working underneath the bridge. The steam, water, or air is admitted into the box, the position of the segments being arranged for one to be up and the other down, or "cross centres," the segments being also under the bridge or cover, and the slide or shield being so arranged that only a portion of the segments are exposed to the action of either steam, water, or air, the pressure of which on the exposed portion of the segments will be sufficient to set in motion the segments, giving them a rocking or oscillating motion, which is communicated by rods and cranks to shafts for driving or turning machinery.

COAL MINE INSPECTORS.

The names of the Inspectors under the Coal Mines Regulation Act, the inspection districts, the number of collieries, and quantities of coal returned to them as raised in 1877:—

	Name of Inspector.	District.	Number of collieries, &c.	Total quantity of coal raised as returned by the Inspectors.
1.	JAMES WILLIS, Newcastle-on-Tyne.	Northumberland ...	212	5,485,573
	J. B. ATKINSON, ditto.	No. div. of Durham		6 383,360
		Cumberland		1,447,223
2.	THOS. BELL, Durham.	Durham, So. div....	210	19,546,292
	W. N. ATKINSON, Fence Houses.	Westmoreland		2,051
		Yorkshire, N. Riding		8,075
3.	FRANK N. WARDELL, Rotheram.	Yorkshire, West Riding	533	...15,805,235
	JOHN GERRARD, Wakefield.			
4.	THOMAS EVANS, Penybryn, Derby.	Derbyshire	412	7,054,091
	A. H. STOKES, Derby.	Nottinghamshire ...		3,877,322
		Warwickshire		922,879
		Leicestershire		1,049,594
5.	THOMAS WYNNE, Gnosall, Stafford.	Cheshire	248	629,000
	S. B. GILROY, Stone, Stafford.	Shropshire		921,000
		Staffordshire, North		4,191,920
6.	JAMES P. BAKER, Tettenhall, Wolverhampton.	Staffordshire, So., & Worcestershire ...	476	... 9,500,000
	W. B. SCOTT, Wolverhampton.			
7.	JOSEPH DICKINSON, Pendleton, Mnchstr.	Lancashire, N. and E., or the Manchester District, and Ireland	382	... 8,881,568
	J. S. MARTIN, Prestwich, Manchester.			
8.	HENRY HALL, Rainhill, Prescot.	Lancashire—	301	
		St. Helens & Wigan.		8,952,425
	J. L. HEDLEY, Fairfield, Liverpool.	Flintshire		854,923
		Denbighshire		1,618,077
		Anglesea		1,320
9.	THOS. CADMAN, Newport, Monmouth.	Gloucestershire—	394	
		Forest of Dean		627,401
	R. DONALD BAIN, Newport, Mon.	Bristol District.....		518,995
		Somersetshire		670,256
		Monmouthshire ...		4,351,775
		Parts of Glamorgan.		791 076
		Do., Brecknocksh.		96,633
10.	THOMAS E. WALES, Swansea.	Parts of Glamorgan.	312	11,054.176
		Do., Brecknocksh.		16,886
	W. GALLOWAY, Cardiff.	Pembrokeshire.....		75.420
		Carmarthenshire ...		525,248
11.	WM. ALEXANDER, Glasgow.	Lanarkshire, W.Div.	344	... 6,867,701
		Ayrshire.....		
	J. M. RONALDSON, Pollokshields, Glasgow.	Stirlingshire, W. Div		
		Dumbartonshire ...		
		Renfrewshire		
		Argyleshire		
		Dumfriesshire		
12.	RALPH MOORE, Rutherglen, Glasgow.	Lanarkshire, E. Div.	351	...11,452,373
		Fifeshire		
		Clackmannanshire..		
	J. T. ROBSON, Cambuslang, Glasgow.	Haddingtonshire ...		
		Edinburghshire ...		
		Linlithgowshire ...		
		Stirlingshire, E. Div.		
		Perthshire		
		Sutherlandshire ...		
		Total for United Kingdom...	4175	...134,179,968

£10 REWARD.—I, CHARLES T. GILBERT, of the PHŒNIX BLUE BRICK AND TILE WORKS, Hingston Down, Gunnislake, Calstock, proprietor of a Patent granted to FREDERICK ARTHUR COWELL, of Gunnislake, Calstock, in the county of Cornwall, for the INVENTION of IMPROVED NON-POROUS and VITRIFIED BLOCKS, BRICKS, and other articles for various purposes, the said articles being manufactured from either or both the rocks known in the counties of Devon and Cornwall by the names of "killas" or "elvan," hereby give notice I will pay the above reward to any person or persons giving such information to my undersigned solicitor as will lead to the conviction of any person or persons INFRINGING the RIGHTS of the said PATENT. (Signed) CHAS. T. GILBERT.
Witness—CHRISTR. V. BRIDGMAN, Solicitor, Tavistock.
Dated this 3rd or September, 1878.

TO CAPITALISTS.
THE ADVERTISER has RECENTLY MADE a NEW DISCOVERY of LEAD five miles out of the town of RHAYADER. The discoverer, being a poor miner, wishes to DISPOSE of the PROPERTY at once. For further particulars, address to "M. C. D.," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

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LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Sept. 14	New Bronfloyd.....	25	£11 15 0	Panther Lead Company.
18	Rookhope	40	9 8 6	Jacob Walton and Co.
20	Minera	93	10 5 0	Panther Lead Company.
—	ditto	57	9 18 6	Walker, Parker, and Co.
—	ditto	26	10 4 6	ditto
—	ditto	16	10 7 6	ditto
—	ditto	9	10 7 6	ditto
26	Roman Gravels.....180	.....	10 4 6	
—	Ladywell	25	9 1 0	George Burr.

BLENDE.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Sept. 20	Minera	57	£ 3 18 0	Vivian and Sons.
—	ditto	50	3 18 0	Dilwyn and Co.
—	ditto	24	4 1 0	Vivian and Sons.
—	ditto	42	4 4 0	Dilwyn and Co.
—	ditto	43	4 9 6	Vivian and Sons.
—	ditto	25	3 18 0	ditto
26	Roman Gravels	30	2 18 0	Kenrick and Sons.

COAL MINES REGULATION ACT, 1872.

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PERSONS desirous of being EXAMINED in this District for MANAGERS' CERTIFICATES OF COMPETENCY, under the above named Act, should at once COMMUNICATE with the Secretary to the Board of the above-mentioned District, at the following address:—The Wardwick, Derby.

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ALTERATION OF DATE.

MR. JOHN THOMAS has received instructions TO SELL, at PUBLIC AUCTION, at Tabb's Hotel, Redruth, on Friday, the 4th of October, at Six o'clock,

450 (5000th) SHARES in the WEST GODOLPHIN MINE; and
150 (5000th) SHARES in PENHALLS MINE.

The former is situated in the parish of BREAGE, and the latter in the parish of ST. AGNES, in the county of Cornwall. They are both very valuable mines, which a slight rise in the price of tin will restore to their normal dividend state; and as all well-informed authorities agree that we shall soon see a higher quotation for this metal, a first-class opportunity for investment is offered.

JOHN THOMAS, Auctioneer and Share Broker.

The Glebe, Redruth, September 18th, 1878.

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MESSRS. HUSSEY AND SON WILL SELL, BY AUCTION, at Webb's Hotel, Liskeard, on Wednesday, the 2nd day of October, 1878, at Three o'clock in the afternoon, the above important and valuable property, which has an estimated leased working area of about 80 acres, situated in the parish of North Hill, Cornwall—33¼ acres are held under a lease for the residue of a term of 21 years, from the 13th day of April, 1855, and the remainder under two other leases for 21 and 20 years respectively, from the 11th day of April, 1863, and the 12th day of March, 1864.

The mine has a sunken shaft, called the engine-shaft, to the depth of about 78 fathoms, and a new shaft to the depth of about 100 fathoms about 360 feet to the west of the engine-shaft, and Capt. Kelly, who has had much experience in mining pursuits, is of opinion that they are on an excellent lode. Although the company has only as yet sold about £270 worth of ore, the mine, when fully developed, will prove very remunerative at a small cost, having splendid water power.

The plant consists of a powerful 60 feet water wheel for pumping, and a 30 feet ditto for winding, crushing, poppet heads, linement of rods, drawing machine, &c.

The pitwork consists of plunger lifts, 30 fathoms 8 inch pumps each. In new shafts, 10 fathoms 7 inch drawing lift.

The mine is surrounded by good roads. A mineral railway runs within four miles, where materials, coal, and minerals may be brought and taken at a small cost.

Particulars and conditions of sale may be had of the Auctioneers, 14, Queen street, Exeter, one week prior to the sale.

The metal already to grass may be taken at a valuation in the usual way.

The leases can be inspected at the office of the Auctioneers, 14, Queen-street, Exeter, seven days prior to the auction, and samples of the ore and further particulars may be obtained of FRANCIS BRODIE, Esq., 14, Bloomfield-terrace, Harrow-road, London.

Dated 14, Queen-street, Exeter, September 9th, 1878.

Agents to the Royal Farmers' Insurance Company.

In the High Court of Justice—Chancery Division.

FORSTER v. FORSTER.

IMPORTANT AND VALUABLE COLLIERIES AND LIMESTONE QUARRIES FOR SALE.

IN PURSUANCE of an Order of His Lordship the Master of the Rolls, TENDERS are INVITED for the PURCHASE, in One Lot, of the IMPORTANT LEASEHOLD SEASALE COLLIERIES, called EAST HETTON COLLIERY, comprising 2740 acres or thereabouts; and TRIMDON GRANGE COLLIERY, comprising 854 acres or thereabouts; also, the adjacent VALUABLE RAISBY HILL LIMESTONE QUARRIES and LIME WORKS (principally leasehold, but partly freehold); also, a FREEHOLD ESTATE and LANDS, comprising about 144 acres, all situate near Hartlepool, in the county of Durham, together with the COLLIERY PLANT of PITS, ENGINES, engine-houses, locomotives, machinery, railways, screens, stores, materials, live and dead stock, coke ovens, agents' and workmen's houses, workshops, stables, granaries, quarry stock and chattels.

The collieries are in connection with the Hartlepool branch of the North-Eastern Railway Company's system, being respectively within 1¼ and 10½ miles of the port of Hartlepool, and 16 and 12½ miles of West Hartlepool, and are also in connection with the main line at Ferry-hill, from which they are respectively five and six miles distant, and are thus well situate for sending their produce to the southern markets, to the Tyne, Sunderland, Middlesborough, and Cleveland, or over sea.

The quarries are in full operation, and the limestone is well known in the market, and is now extensively used in some of the largest ironworks in this district and in Cleveland, and is also largely used for chemical purposes, and the proximity of the works to the North-Eastern Railway facilitates the delivery of large quantities at all times with the utmost promptitude and regularity.

Tenders to be sent (in a sealed cover, marked in the corner "Forster *v.* Forster") to CHARLES BURNEY, Esquire, the Chief Clerk of His Lordship the Master of the Rolls, at his chambers, No. 10, Chancery-lane, London, on or before the 31st day of October, 1878.

Particulars, plans, conditions of sale, and forms of tender, may be obtained on application to Messrs. TRINDERS and CURTIS HAYWARD, Solicitors, 4, Bishopsgate-street Within, E.C.; T. W. DENBY, Esq., 8, Frederick's-place, Old Jewry, E.C.; J. ANDERSON ROSE, Esq., 11, Salisbury-street, Strand, W.C.; G. B. FORSTER, Esq., Backworth, Newcastle-on Tyne; W. O. WOOD, Esq. (the Viewer), East Hetton Colliery, Coxhoe, County Durham; MATTHEW FORSTER, Esq. (the Receiver), 1, Doctor Johnson's-buildings, Temple, E.C.; and R. F. MATTHEWS, Esq., Seaton Carew, West Hartlepool.

Orders to view can be obtained by written application to Messrs. TRINDERS and CURTIS HAYWARD, or G. B. FORSTER, Esq.

A LEASEHOLD COLLIERY FOR SALE.

In the High Court of Justice—Chancery Division.

1874, M. 17, Morgan *v.* Elford (interpleader), West of England Bank, claimants; Morgan *v.* Elford (interpleader), Charles Norton, claimant; Morgan *v.* Elford (interpleader), Catherine Hannah Thompson, and William Stainer Thompson, claimants.—1876, M. 371, Morgan *v.* Morgan.—1878, M. 142, Morgan *v.* Thompson.

PARTICULARS of SALE of a LEASEHOLD COLLIERY and the FIXED PLANT and MACHINERY thereon, and of the LOOSE PLANT and MACHINERY, TRUCKS, STOCK-IN-TRADE, and other chattels and things in and about the said colliery, which will be SOLD BY PUBLIC AUCTION, in one Lot, under an execution addressed to the Sheriff of Carmarthenshire, pursuant to an Order of the High Court of Justice, Chancery Division, made on the 9th day of July, 1878, by His Lordship the Vice-Chancellor Sir RICHARD MALINS, the Judge to whose Court the said causes are attached, in certain actions of "Morgan *v.* Elford, 1874, M. 17," Morgan *v.* Morgan, 1876, M. 371," and "Morgan *v.* Thompson, 1878, M. 142," and by the direction of the said Judge, by the said Sheriff of Carmarthenshire, at the Mackworth Arms, Swansea, in the county of Glamorgan, on Thursday, the 10th day of October, 1878, at Two for Three o'clock in the afternoon, all that VALUABLE and IMPORTANT LEASEHOLD COLLIERY, called the

CAWDOR COLLIERY,

Situate on the Bettws Mountain, near Cwmamman, Carmarthenshire, and about 16 miles from Llanelly, and 20 miles from Swansea, with which ports respectively it has direct railway communication, together with the FIXED PLANT and MACHINERY annexed thereto, and also all the LOOSE PLANT, MACHINERY, TRUCKS, STOCK-IN-TRADE, and other chattels in and about the same.

The said colliery comprises the well-known vein called the Red Vein, of about 4 ft. 6 in. in thickness, under an area of 250 acres, or thereabouts, and is held under a lease or agreement for a lease granted by Earl Cawdor, for the unexpired term of 49 years, from the 25th March last, at the yearly dead or sleeping rent of £300, merging in a royalty of 6d. per ton of 2464 lbs. on coal shipped, and 9d. per ton on coal used for calcining or manufacturing purposes, with wayleave rents about 2d. per ton, and a six years average clause.

The coal unworked may be estimated at from 1 to 1½ million tons.

The LOOSE PLANT, MACHINERY, &c., consist of—

In the Yard: 12 iron trams, 7 wheelbarrows, 7 shovels, 9 trucks (7 full of culm, 2 empty), lot of small coal, tram weighing machine, truck weighing machine, iron sleepers (about 4 tons), lot of old iron, loose timber, lot of iron wheels, 16 planks, coal screen.

At Colliery: 3 iron trams, lot of loose rails, 15 pieces of iron pipes, weighing machine, engine (16 in. cylinder) and boiler, mining barometer, cross-cut saw, clock, condenser (new).

Underground: 1 Tangye pump (10 in. cylinder), 2 ft. stroke, steam piping from boiler to pump, about 200 yards pump piping, 15 trams, 5 coal carts, lot of old rails.

Stables: Cart, 3 sets of harness, chaffcutter, iron pipes, 8 pump pipes.

Engine Shed: Locomotive engine ("Earl Cawdor"), 23 iron trams, lot of loose rails, chain (about 400 yards), and apparatus to incline, crab winch, 4 casks, oil can, loose timber, iron partings, coupling chains.

Office: Table, chair, stool, bench, hatchet, poker.

Field No. 1: Water tank.
Field No. 3: 16 lengths iron rails, 1 wheel.
Field No. 4: 9 lengths iron rails, 11 iron trams, grindstone, 1 old wagon, 5 iron pipes, 2 old iron wheels, lot of timber.
Field No. 1A: Loose rails, 1 tram.
Field No. 2A: 6 pieces loose rails.
Field No. 3A: 7 sleepers.
Field No. 4A: 5 sleepers, 3 pieces of rail.
Field No. 5A: 5 pieces of rail.
Field No. 6A: 2 trams, 3 long rails, 4 short rails.
Lane: 1 tram, 2 pieces of iron.
Field No. 7A: 4 trams, 1 rail, 2 pieces of iron.

MR. WM. HARRY REES, Auctioneer.

Copies of the lease and agreement, and of the several agreements for wayleaves, may be inspected at the offices of W. MORGAN GRIFFITHS, Esq., Solicitor, Carmarthen (the acting Under-Sheriff); JOHN DONAGUE, Esq., Solicitor, Swansea; Messrs. HACON and TURNER, 18, Fenchurch-street, London; and Messrs. G. L. P. EYRE and Co., 1, John-street, Bedford-row, London; and further particulars may also be obtained of either of the above-named, or of R. EATON EVANS, Esq., Solicitor, Haverfordwest, the Under-Sheriff; or of the Auctioneer, as his Auction and Estate Offices, Neath.

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IN THE HIGH COURT OF JUSTICE, CHANCERY DIVISION.—*RE* THE GREAT WEST VAN LEAD MINING COMPANY (LIMITED).

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Situate in the parish of Llanbadarn Fawr, in the county of Cardigan, on the high-road midway between Llanidloes and Aberystwith. It contains a vast amount of lead ore, with a surface area of 720 acres, and might, at a comparatively small outlay, be rendered a most lucrative speculation.

The sale will include all the valuable PUMPING and other MACHINERY, together with the expensive PLANT and IMPLEMENTS appertaining to the mine, the whole being in excellent working order.

Particulars and conditions of sale may be had of JAMES WADDELL, Esq., Public Accountant (the Official Liquidator), 11, Queen Victoria-street, E.C.; of J. JOHNSON WINSER, Esq., Solicitor, 70, Chancery-lane, W.C.; of Mr. W. BRAMWELL, at the Mine; and of the Auctioneers, 11, Queen Victoria-street, E.C.

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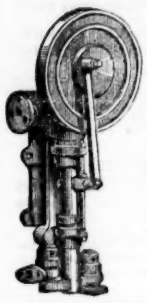

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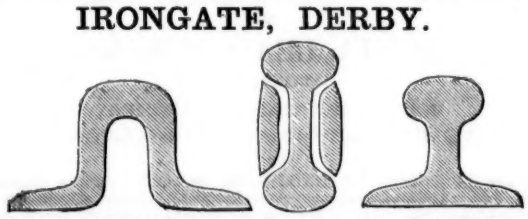

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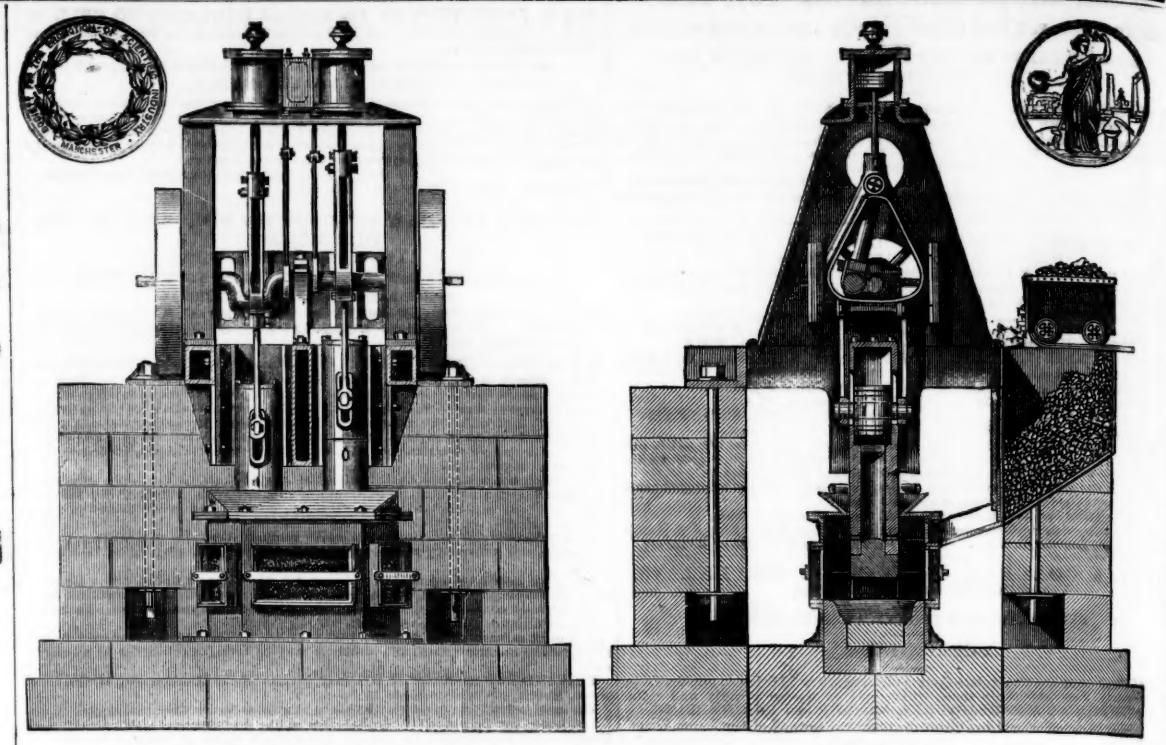

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THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.

Shares	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
4000	Brookwood, c, Buckfastleigh*	1 16 0	... 1 ...	½ 1	... 3 16 0	... 0 2 0	...Nov. 1875
2000	Bryn Alyn,* l, Denbigh	10 0 0	... — ...	...	... 0 7 0	... 0 7 0	...Jan. 1877
10000	Caron, l, Cardigan*	2 0 0	... 2½ ...	2 2½	... 0 2 0	... 0 2 0	..July 1878
1000	Carn Brea, c, t, Illogan†	53 7 6	... 40 ...	32½ 35	... 308 0 0	... 1 0 0	...Feb. 1874
400	Cashwell, l, Cumberland*	2 10 0	... — ...	...	... 1 9 6	... 0 2 0	...Aug. 1876
2450	Cook's Kitchen, t, Illogan†§	24 14 9	... 1½ ...	⅞ 1½	... 11 17 0	... 0 7 6	...Jan. 1872
10240	Devon Gt. Consols, c, Tavistock†*	1 0 0	... 2½ ..	1½ 2	... 116 15 0	... 0 5 0	..July 1877
4296	Dolcoath, c, t, Camborne	10 14 10	... 25 ...	23 25	... 112 16 3	... 0 5 0	...Aug. 1878
5000	East Black Craig,* l., Scotland	5 0 0	... — ...	...	... 0 10 0	... 0 10 0	...Feb. 1877
00	East Darren, l, Cardiganshire	32 0 0	... — ...	...	... 235 10 0	... 1 0 0	...Aug. 1876
6400	East Pool, t, c, Illogan	0 9 9	... 9½ ..	8¾ 8¾	... 15 11 9	... 0 2 6	...Aug. 1878
40000	Glasgow Cara.,c* [30,000 £1 p., 10,000 15s. p.]	...	... 1¾ ...	¾ 1¾	... 0 13 10	... 0 0 6	...Aug 1878
7500	Gorsedd and Merllyn Cons., l, Flint	2 10 0	... 4½ ...	3½ 4¾	... 0 5 0	... 0 5 0	...Aug. 1877
15000	Great Laxey, i, Isle of Man*	4 0 0	... 18¾ ..	17 18	... 23 19 0	... 0 8 0	..July 1878
615	Gt. Retallack, l, bl, Perranzabuloe	5 18 6	... — ...	...	... 0 1 6	... 0 1 6	...May 1876
6400	Green Hurth, i, Durham*	0 6 0	... 1 ...	¾ 1	... 1 18 0	... 0 3 0	...Mar. 1878
20000	Grogwinion, l, Cardigan*	2 0 0	... 3 ...	2½ 3	... 0 14 10	... 0 0 10	..Aug. 1878
9830	Gunnislake (Clitters), t, c	5 5 0	... 2¾ ...	2¼ 2¾	... 0 13 9	... 0 1 0	...Oct. 1876
60000	Holmbush, a, c, s-l, Callington*	1 0 0	... — ...	...	... 0 4 6	... 0 0 6	...Sept. 187-
2800	Isle of Man, i, Isle of Man*†	25 0 0	... — ...	...	... 82 5 0	... 0 10 0	...Feb. 1876
20000	Leadhills,* l, Lanarkshire	6 0 0	... 2½ ..	2 2½	... 0 15 0	... 0 3 0	..Mar. 1878
400	Lisburne, l, Cardiganshire	18 15 0	... 60 ...	55 60	... 586 10 0	... 1 0 0	...May 1878
14000	Llanidloes,* l, Montgomery	3 0 0	... 1¾ ...	¾ 1¾	... 0 9 0	... 0 4 6	...Nov. 1876
9000	Marke Valley, c, Linkinhorne	5 3 6	... ½ ...	⅜ ½	... 7 15 0	... 0 2 0	..Jan. 1876
10000	Mellanear Copper, Hayle*	2 0 0	... 4¼ ..	3¾ 4¼	... 0 5 0	... 0 3 0	..July 1878
9000	Minera Mining Co., i, Wrexham*	5 0 0	... 10 ...	8 10	... 67 15 8	... 0 2 6	..Sept. 1878
20000	Mining Co. of Ireland, ci, c, l*	7 0 0	... — ...	...	... 23 17 6	... 0 2 6	..Jan. 1878
444	North Busy, c, Chacewater	3 9 6	... — ...	...	... 1 10 0	... 1 0 0	..July 1877
10289	North Heudre, l, Wales	2 10 0	... — ...	...	... 2 7 6	... 0 5 0	..June 1878
30000	Panty Mwyn,* l, Mold (8794 iss.)	2 0 0	... — ...	...	... 0 3 0	... 0 2 0	..Aug 1878
6000	Pedn-an-drea Con., t, Redruth	0 8 6	... — ...	...	... 0 9 0	... 0 9 0	..June 1877
5000	Penhalls, t, St. Agnes	3 2 6	... 1 ...	¾ 1	... 3 13 6	... 0 2 0	..July 1875
6000	Pennant, l, bar, North Wales*	5 0 0	... 5 ...	4 5	... 0 10 0	... 0 5 0	..Mar. 1878
45793	Penstruthal,* t, c, Gwennap	2 0 0	... ¾ ...	½ ¾	... 0 2 8	... 0 0 8	..Nov. 1875
18000	Prince Patrick,* s-l, Holywell	1 0 0	... 1¾ ..	1¾ 1¾	... 0 14 0	... 0 1 3	..Jan. 1876
10000	Red Rock,* l, Cardigan	2 0 0	... 2½ ..	2 2½	... 0 4 0	... 0 2 0	..Jan. 1878
12000	Roman Gravels, l, Salop*	7 10 0	... 7¾ ..	7 7½	... 7 15 0	... 0 5 0	..Mar. 1878
512	South Caradon, c, St. Cleer	1 5 0	... 60 ...	40 60	... 743 10 0	... 1 0 0	...Sept. 1878
6123	South Condurrow, t, c, Camborne‖	6 5 6	... 11 ..	10¾ 11	... 4 1 0	... 0 0 8	...Aug. 1878
12000	St. Harmon,* l, Montgom	3 0 0	... 3 ...	2½ 3	... 0 12 0	... 0 3 0	..July 1878
10000	So. Fr. Patrick,* s-l. (8000 sh. issued)	1 0 0	... — ...	...	... 0 7 0	... 0 1 0	...Oct. 1875
4500	South Wh. Frances, c, Illogan†	7 12 6	... 5½ ..	4½ 4¾	... 37 5 0	... 0 5 0	...Sept. 1878
14000	Tankerville, i, Salop*	6 0 0	... 3 ...	3 3½	... 4 17 0	... 0 5 0	...Dec. 1876
6000	Tincroft, c, t, Pool, Illogan†§	11 10 0	... 7½ ..	6 7	... 50 8 6	... 0 5 0	...May 1877
15000	Van, l, Llanidloes*	4 5 0	... 18 ...	17 18	... 23 0 6	... 0 5 0	...July 1878
3000	W. Chiverton, l, Perranzabuloe†	12 10 0	... 6 ...	4½ 5½	... 55 10 0	... 0 10 0	...Feb. 1878
1783	West Poldice, St. Day	10 0 0	... — ...	...	... 1 19 0	... 0 4 0	..July 1876
512	West Toigus, c, Redruth	95 10 0	... 52½ ...	49 51	... 21 0 0	... 1 5 0	...Sept. 1878
2048	West Wheal Frances, t, Illogan	28 8 9	... 2 ...	1½ 2	... 3 12 6	... 0 5 0	...Oct. 1872
600	West Wheal Seton, c, Camborne†	47 0 0	... 8 ...	7 8	... 446 0 0	... 0 15 0	...Apr. 1878
12000	West WyeValley,* l, Montgom	3 0 0	... 2¾ ..	2¾ 2¾	... 0 12 0	... 0 3 0	...Nov. 1877
1024	Wh. Eliza Consols, t, St. Austell	18 0 0	... — ...	...	... 19 10 0	... 1 10 0	...Aug. 1878
3048	Wheal Jane, t, Kea	2 13 10	... ¾ ...	½ ¾	... 8 5 0	... 0 5 0	..July 1875
4596	Wheal Kitty, t, St. Agnes	8 4 6	... 1¾ ..	1¼ 1¾	... 11 19 6	... 0 2 6	...Dec. 1874
25000	Wh. Newton, a, c, s, t, Calstock*	1 0 0	... — ...	...	... 0 8 6	... 0 4 0	...Sept. 187-
80	Wheal Owles, t, St. Just‖	161 5 0	... 27 ...	26 27	... 522 10 0	... 4 0 0	...Aug. 1872
3000	Wheal Peevor, t, Redruth	7 11 0	... 6¾ ..	6¼ 6¾	... 0 10 0	... 0 5 0	...Aug. 1878
6000	Wheal Prussia, t, Redruth	0 5 0	... — ...	...	... 0 4 0	... 0 1 0	..July 1877
10000	Wye Valley, l, Montgomery*	3 0 0	... 2½ ..	2 2½	... 0 10 6	... 0 4 6	...Oct. 1876

FOREIGN DIVIDEND MINES.

35500	Alamillos, l, Spain*†	2 0 0	... 1½ ..	1 1½ xd ..	... 1 19 3	... 0 1 0	...April 1878
80000	Almada and Tirito Consol., s*†	1 0 0	... ⅜ ...	⅜ ⅜	... 0 6 3	... 0 1 0	...May 1876
20000	Australian, c, South Australia†	7 7 6	... 1¾ ...	1¾ 1¾	... 1 1 6	... 0 2 0	..July 1878
10000	Battle Mountain,* c, (6240 part pd.)	5 0 0	... — ...	...	... 0 10 0	... 0 10 0	...Nov. 1872
15000	Birdseye Creek, g, California*	4 0 0	... ⅞ ..	½ ¾	... 0 14 0	... 0 2 6	...June 1874
20000	Cape Copper Mining,*† So. Africa	7 0 0	... 31 ...	29 30 xd ..	... 32 5 0	... 0 17 6	...Sept. 1878
34433	Cedar Creek, g, California*	5 0 0	... ⅜ ...	⅛ ⅜	... 0 5 0	... 0 2 6	...June 1873
35000	Cesena Sul. Co., Romanga, Italy*	10 0 0	... — ...	...	... 0 18 0	... 0 2 0	...Aug. 1878
15000	Chicago, s, Utah*	10 0 0	... 1¼ ..	¾ 1¼	... 2 8 0	... 0 4 0	...Nov. 1876
65000	Colorado United, s-l, Colorado*†	5 0 0	... 4 ...	3¾ 4	... 0 13 6	... 0 4 0	...Jan. 1878
10000	Copiapo, c, Chili* (£20 shares)	16 15 0	... — ...	...	... 7 11 5	... 0 3 0	...May 1877
100000	Don Pedro North del Rey*†	0 16 0	... ⅝ ...	⅝ ⅝	... 2 9 9	... 0 2 0	...Mar. 1872
23500	Eberhardt & Aurora, s, Nevada*†	10 0 0	... 4¾ ...	4½ 5	... 1 8 0	... 0 3 0	...Dec. 1877
70000	English & Australian, c† S. Aust.	2 10 0	... 1¼ ...	1 1¼	... 2 15 9	... 0 1 0	...Mar. 1877
30800	Flagstaff, s, Utah*	10 0 0	... ⅝ ...	⅜ ⅝	... 4 2 0	... 0 5 0	..July 1873
25000	Fortuna, l, Spain*†	2 0 0	... 4½ ...	3¾ 4¼	... 6 19 10	... 0 5 0	...April 1878
55000	Frontino & Bolivia, g, New Gran.*†	2 0 0	... 2⅜ ...	2½ 2⅝	... 0 2 6	... 0 1 6	..Sept. 1878
30000	Gold Run, hyd.	1 0 0	... — ...	...	... 0 2 4	... 0 0 4	...Oct. 1872
68000	Kapunda Mining Co. Australia†	1 3 0	... — ...	...	... 0 2 4	... 0 0 6	...June 1873
20000	Last Chance, s,* Utah	5 0 0	... 1 ...	⅝ ⅞	... 0 14 0	... 0 2 0	..July 1878
15000	Linares, l, Spain*†	3 0 0	... 4½ ...	4 4½	... 17 7 10	... 0 5 0	...April 1878
85000	London and California, g*†	2 0 0	... ½ ...	¼ ½	... 0 1 0	... 0 1 0	..July 1876
7887	Lusitanian, Portugal*† (£5 sh.)	3 10 0	... — ...	...	... 1 11 6	... 0 1 6	...Mar. 1873
5000	Mamm. Copperopolis of Utah, c, s	10 0 0	... — ...	...	... 0 5 0	... 0 5 0	...Sept. 1878
5000	Mountain Chief, s, Utah*	10 0 0	... — ...	...	... 0 4 0	... 0 4 0	...Jan. 1873
10000	Pontgibaud, s-l, France†	20 0 0	... 29 ...	28 30	... 25 19 11	... 0 11 0	...June 1876
100000	Port Phillip, g, Clues*†	1 0 0	... ⅝ ...	⅜ ⅝	... 1 11 0	... 0 1 0	...Sept. 1878
54000	Richmond Consols, s, Nevada*†..	5 0 0	... 9½ ..	10¼ 11	... 6 1 6	... 0 10 0	...Aug. 1878
40000	Santa Barbara,* g, Brazil	0 10 0	... 1⅜ ..	1⅜ 1⅜	... 0 4 9	... 0 1 0	...April 1878
120000	Scottish Australian Mining Co.*†	1 0 0	... 2 ...	1¾ 2	... 15 per cent.		...May 1878
65000	Scottish Austral. Mining Co., New	0 10 0	... ⅞ ...	¾ ⅞	... 15 per cent.		...May 1878
12500	Sierra Buttes, g, California*†	2 0 0	... 1¾ ..	1¼ 1¾	... 1 18 0	... 0 2 0	...Oct. 1877
60000	South Aurora, s, Nevada*	5 0 0	... ⅜ ...	⅛ ⅜	... 0 14 2	... 0 2 0	...Nov. 1873
£263000	St. John del Rey*† (£5 stock & multiples dealt in)	...	... — ...	...	... 289	290	... ½ year. 17½ p. ct. for June 1878
20000	Tolima, g, s* So. America	5 0 0	... — ...	...	... 0 11 6	... 0 6 6	...May 1874
25000	Victoria (London)*, g, Australia	1 0 0	... ¾ ...	⅝ ¾	... 0 12 6	... 0 0 7½	...Jan. 1878
15000	Western Andes, s,* New Granada	5 0 0	... — ...	...	... 0 12 0	... 0 0 12	...July 1878
91000	W. Prussian (5500 pref. sh. 10l. pd)	10 0 0	... 11 ...	10½ 11	... 1 2 0	... 0 0 4	...July 1878

NON-DIVIDEND FOREIGN MINES.

Shares	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
12000	Argentine, g, Argentine Republic	5 0 0	... — ...	...	...Fully pd
3000	Bellavista, s, Peru* (£10 shares)	10 0 0	... — ...	...	...Fully pd.
30000	Blue Tent, hyd., California	5 0 0	... 3 ...	2¼ 3	...Fully pd.
16000	Condes of Chili, s-l	2 0 0	... ⅝ ...	½ ⅝	...Fully pd.
20000	English Australian, g, Victoria*	5 0 0	... — ...	...	...Fully pd.
35000	Excelsior Hydraulic Gold Washing Co., California*	1 0 0	... — ...	...	...Fully pd.
100000	Exchequer, g, s, California*†	6 0 0	... ⅜ ...	⅝ ⅜	...Fully pd.
40000	Holcombe Valley, g,* California	1 0 0	... ⅜ ...	⅛ ⅜	...Dec. 1871
3000	Hornachos,* s-l, Spain	1 0 0	... — ...	...	...Fully pd.
12000	Hultafall,* l, bl, Orebro, Sweden	10 0 0	... 14 ...	13 14	...Fully pd
12000	Hunter Consolidated, s-l, Utah	5 0 0	... 4½ ...	3	...Fully pd
20000	Imperial Brazilian Collieries, Brazil*	10 0 0	... — ...	...	...Fully pd.
100000	I. X. L., g, s, California*	5 0 0	... — ...	...	...Fully pd.
50000	Javali, g, Nicaragua*	1 0 0	... — ...	...	...Fully pd.
3500	La Manche, l, Newfoundland	2 0 0	... ¼ ...	⅛ ¼	...Fully pd.
12000	Lanestoso,* i, s, Viscaya, Spain (£2 shares)	10 0 0	9s. ...	7s. 9s.	...Fully pd.
75000	Malabar, g, Colombia* (67165 issued)	1 15 0	... — ...	...	...Fully pd.
40000	Malpaso, g, Colombia* (7400 pref. shares, fully paid)	1 0 0	... — ...	...	...Mar. 1876
12000	Menzenberg, c, Honnef, Germany*	1 0 0	... ¼ ...	⅛ ¼	...Fully pd.
4588	New Bensberg, i, l, Germany	5 5 0	... ¾ ...	¾ ¾	...Fully pd.
66000	New Quebrada, c, Venezuela*	5 0 0	... — ...	...	...Fully pd.
20000	New Zealand Kapanga, g, Coromandel*	5 0 0	... — ...	...	...Nov. 1876
3000	Oregon,* g, Oregon, U.S. (preference shares)	5 0 0	... 1¾ ...	1½ 1¾	...Fully pd.
50000	Panulcillo, c, Chili*† (£80000 debentures)	4 0 0	... 1½ ...	1⅜ 1½	...Fully pd.
80000	Pestarena United, g, Italy*†	4 0 0	... 4 ...	1¾ 1¾	...Fully pd.
25000	Pitanqui,* g, Brazil (incl. 6000 sh. £1 fully paid)	3 0 0	... ¼ ...	⅛ ¼	...Fully pd.
25000	Placerville,* g q, California	0 5 0	6s. ...	4s. 6s.	...Fully pd.
50000	Providencia and New Rosario, s, Mexico*	2 0 0	... ⅜ ...	¼ ⅜	...Aug. 1878
40000	Ravenscliff, g, New Zealand; c, South Australia	1 0 0	... — ...	...	...Fully pd.
5000	Rica, g, Colombia* (40000 issued)	1 0 0	... — ...	...	...Fully pd.
£2,181,000	Rio Tinto,* c, Huelva, Spain	1 0 0	... ⅜ ...	⅛ ⅜	...Fully pd.
100000	Rosea Grande, g, Brazil*† (£1 shares)	Stock	... 63 ..	61½ 62½	...Fully pd.
30040	Russia Copper, Orenburg and Ufa*†	0 19 0	... ⅛ ...	⅛	...July 1872
10000	Silver Plume, s, Colorado*	10 0 0	... — ...	...	...Fully pd
30000	Tecoma, s, Utah*	1 0 0	... — ...	...	...Fully pd.
43174	United Mexican, s, Mexico*†‖	10 0 0	... ⅜ ...	⅜ ⅜	...Fully pd.
14000	Utah, g, s-l, Utah*	29 0 2	... 4 ...	3½ 4	...May 1878
10000	Virneberg, c Rheinbreitbach, Germany* (£2 shares)	5 0 0	... — ...	...	...Fully pd.
15000	Yorke Peninsula, c, South Australia	1 15 0	... — ...	...	...Jan. 1878
40000	Yorke Peninsula, c, South Australia Preference	1 0 0	... ⅜ ...	¼ ⅜	...Fully pd.
			... 1 ...	¼ 1	...Fully pd.

§ Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

	Closing Prices	
Argentine, 1868 6 per cent.	75	76
Bolivia, 6 per cent.	27	28
Brazilian, 1865, 5 per cent.	91	93
Chilian, 1866, 7 per cent.	97	100
City of Providence, 5 p.c. coupon bnds	101	103
Egyptian, Gov. preference	75¼	75¾
Do., unified debt, scrip	56½	57¼
Do., 7 per cent., V.M.L.	78	80
Do., per cent. guar.	83	85
Do., K. Daira Sanieh	58	60

	Closing Prices	
Foreign and Col. Gov. Trust, 6 p. ct.	73	78
Do., 5 per cent., 2d issue	63	68
Do., 6 per cent., 3d issue	63	68
Do., 1872, 4th issue	61	65
Do., 1873, 5th issue	55	60
Peruvian, 1870, 6 per cent.	13½	14
Do., 1872, 5 per cent.	11	11¼
Russian, 5½ per cent. L. Mort.	...	—
Spanish, Quicksilver Mort., 5 p. ct.	96	98
United States Mort. 6 per cent.	100	102

b, blende; ci, coal; c, copper; g, gold; l, lead; s, silver; si, slate; s-l, silver-lead; t, tin; z, zinc.

* Limited Liability Companies; † quoted on the Stock Exchange; ‖ have paid dividends.

NON-DIVIDEND MINES.

Shares.		Paid.	Last wk.	Clos. pr
40000	Aberdannant, l, Llanidloes*	1 0 0	... ¾ ...	½ ¾
2560	Aberllyn,* l, bl, Carnarvon	10 0 0	... 11 ...	10 11
10000	Aberystwith,* s-l, Cardigan	5 0 0	... — ...	...
80	Albion, i, Cornwall	100 0 0	... — ...	...
7800	Alvig. & Burng.,*t, St. Aust.	3 0 0	... 1¾ ...	1¼ 1¾
12000	Assheton, i, Carnarvonshire*	5 0 0	... 1 ...	⅝ ¾
50000	Ballycummisk,* c, Schull	2 0 0	... — ...	...
12000	Bedford Unit.,* c. Tavist. (1l. liab.)	0 1 0	... ¼ ...	⅛ ¼
30000	Bettws y-Coed,* l (20,000 issued)	1 0 0	... 1⅜ ...	1⅛ 1⅜
800	Blaen Caelan,* l, Cardigan	3 0 0	... 4¾ ...	4½ 4¾
3937	Blue Hills, t, c, St. Agnes	3 16 6	... ¾ ...	½ ¾
30000	Bodidris,* l, bl, Denbighshire	1 0 0	... 1¾ ...	1½ 1⅝
1000	Bollihope Vale,* s-l, Durham	5 0 0	... — ...	...
200	Botallack, t, c, St. Just‖	123 15 0	... — ...	...
2000	Bowden Hill,* m	1 0 0	... — ...	...
6000	Bradwell Moss Rake	1 0 0	... 1 ...	¾ 1
20 00	British,* s l, Wrexham	5 0 0	... 3 ...	2 3
256	Browngelly, c, St. Neot	2 0 0	... 2½ ...	2¼ 2½
50000	Cambrian,* s-l, c, Cardiganshire	2 0 0	... 3½ ...	3¼ 3½
20000	Central Foxdale, i, I. of Man* (2l. sh.)	1 5 0	... — ...	...
10000	Central Van.* l, bl, Llanidloes	5 0 0	... — ...	...
5120	Clementina, l, Llanrwst*	1 0 0	... 1½ ...	1¼ 1⅜
7500	Combellack,* t, Wendron	2 0 0	... — ...	...
6000	Combmartin, s-l, North Devon	0 7 0	... ⅛ ...	⅛
24000	Court Grange, s-l, Cardiganshire	1 0 0	... 1⅛ ...	1 1⅛
15000	Cwm Brwyno,* l, Cardigan	2 0 0	... — ...	...
15000	Cwm Dwyfor,* c, s-l, Wales	1 0 0	... — ...	...
5000	Ditto, 12½ per cent. pref.	1 0 0	... — ...	...
3000	Cwmystwith (New), Cardiganshire.	5 0 0	... — ...	...
1 80	D'Eresby Cons., l, bl, Carnarvon	10 0 0	... 11 ...	10 11
512	D'Eresby Mountain, i, bl, Llanrwst	20 0 0	... 85 ...	75 85
20000	Denbighshire Consolidated, l*	3 0 0	... 1¾ ...	1¾ 2
12000	Derwent,* l, Durham	4 0 0	... — ...	...
10000	Dubby Syke, l, Durham*	0 15 0	... — ...	...
6144	East Caradon, c, St. Cleer‖	2 19 0	... ⅛ ...	¾ ⅛
4000	East Chiverton, i, Perranzabuloe	7 7 6	... 1⅜ ...	1⅛ 1⅜
3000	East Craven Moor*, l, Pateley Bdge	10 0 0	... 10 ...	9 10
600	East Goginan, l, Cardigan	2 0 0	... — ...	...
18000	East Van, i, Llanidloes*	5 0 0	... 3 ...	2¼ 3
1722	East Wh. Lovell, t, Helston	9 1 0	... ⅜ ...	¼ ⅜
20000	Elgar,* s-l, Cardiganshire	1 0 0	... ⅜ ...	⅜ ⅜
10000	Frosterley,* l, Durham	1 0 0	...	...
3950	Gawton, c, Tavistock	4 5 6	... ⅜ ...	⅛ ⅜
12000	Glan Clwyd,* l, Gwyddelwern	1 0 0	... — ...	...
14000	Glenroy,* s-l, Isle of Man	4 5 0	... ⅜ ...	⅛ ⅜
10000	Glyn,* l, Llanidloes	2 0 0	... ¾ ...	⅛ ⅜
12000	Goginan, & Level Newydd, Card., l	2 10 0	... — ...	...
20000	Gorsen,* s-l, Carmarthen	1 0 0	... 1 ...	¾ 1
20000	Gt. E. Foxdale, l, I. of Man (1l. sh)	0 18 0	... — ...	...
12000	Great Holway,* l, Flintshire	5 0 0	... 5¼ ...	4½ 5
9500	Great Pant-y-Pydew, l, Holywell	2 0 0	... — ...	...
6000	Gt. Wheal Eleanor, t, North Bovey.	1 17 6	... 2 ...	1¾ 2
6000	Great Wheal Rodd,* s-l, Cornwall	0 10 0	... 1 ...	¾ 1
10000	Harehope Gill,* l, Durham (£1 sh.).	0 5 0	... — ...	...
600	Hartington Moor,* carb. l, Derby	1 0 0	... 2 ...	1½ 2
6400	Harwood,* l, Durham	0 15 0	... — ...	...
1024	Herodsfoot, l, near Liskeard†	8 10 0	... 4½ ...	4 4½
18000	Hingston Down, c, Calstock*†	0 6 0	... — ...	...
3000	Hush Elsteddfod Minera,* l	2 0 0	... — ...	...
2500	Killaloe, sl, Tipperary‖	1 0 0	... — ...	...
6000	Killifreth, t, Chacewater	2 7 6	... 1 ...	¾ 1
25000	Kingston Con., s-l, Stoke Climsland.	1 0 0	... — ...	...
	Ditto, preference	1 0 0	... 1½ ...	1 1¼
12000	Ladywell,* l, Salop	2 10 0	... 1 ...	¾ 1
12000	Ditto, 10 per cent. pref., 1l. each	0 10 0	... ⅝ ...	½ ⅝
6000	Lead Era,* l, Mold	2 10 0	... 3 ...	2½ 3
2800	Levant, c, t, St. Just	10 4 6	... — ...	...
1400	Lisburne Syndic.,* l, Cardigan	5 0 0	... 8 ...	6 8
6000	Livingstone Consols, t, St. Agnes	0 10 0	... 1 ...	¾ 1
5120	Lovell, t, Wendron	0 16 0	... 2 ...	1½ 2
25000	Llanrhaiadr, l, Montgomery*	2 0 0	... — ...	...
30000	Llanrwst,* l, Carnarvon	2 0 0	... 3 ...	2 3
24	Mawston,* l, South Wales	50 0 0	... 65 ...	55 60
6000	Medlyn Moor, t, Wendron	2 9 10	... — ...	...
11000	Melyndwr, l, Cardigan*	8 0 0	... 1¾ ...	¾ 1¼
7000	Mid Devon Copper*	0 6 8	... 1¼ ...	1 1¼
21000	Ditto	0 2 6	... 1 ...	¾ 1
8000	Mineral Corp. of Great Britain*	10 0 0	... 11 ...	10 11
11000	Monydd Gorddu, l, Cardigan* (Red.)	5 0 0	... 2½ ...	2¼ 2½
12000	Morfa Du, z, g, s, Anglesea	0 15 0	... ⅝ ...	⅜ ⅝
25000	Nant-y-Ronen, s-l, Cardigan*	1 0 0	... — ...	...
15000	Nascent Copper*	1 0 0	... — ...	...
4768	New Bronfloyd,* ., Cardigan (5l. sh.)	3 16 0	... 4½ ...	4¼ 4½
8000	New Dolcoath, t, c, Camborne*	3 0 0	... 1¾ ...	1½ 1¾
20000	New East Foxdale, s-l, Isle of Man.	0 15 0	... — ...	...
1492	New Hendra, t, Breage	3 9 0	... — ...	...
3200	New South Merllyn, i, Flint*	2 10 0	... ⅛ ...	⅛ ⅛
3500	New Tincroft,* t, Lelant	0 0 0	... 3 ...	2½ 3
5000	New Wheal Emma, c, Buckfastleigh	2 0 0	... — ...	...
4000	North Cornwall,* l, Cornwall	5 0 0	... 5¾ ...	5 5¾
30000	North Laxey,* Isle of Man	1 0 0	4s. ...	2s. 4s.
2000	North Levant, t, c, St. Just‖	12 16 0	... 1 ...	¾ 1
50000	North Molton, c, mn, i, Devon	1 0 0	... 1 ...	1
20000	North Prince Patrick,* i, Holywell.	1 0 0	... — ...	...
5936	North Treskerby, c, St. Agnes	5 17 10	... — ...	...
6400	Oola Hills,* s-l, Limerick	5 0 0	... — ...	...
12000	Pandora,* l, Carnarvon	2 0 0	... 1 ...	¾ 1
6000	Park Valley,* s-l, North Devon	0 4 0	... 1 ...	¾ 1
6000	Parracombe, s l, Devon	0 5 0	... ⅝ ...	½ ⅝
16923	Parys Mountain,* c, Anglesea	3 0 0	6s. ...	¾ ⅜
12000	Phœnix, & W. Phœnix, t, c, Link.	5 7 3	... 2 ...	1½ 2
4000	Pateley Bridge, l, Yorkshire	5 0 0	... 4¼ ...	3½ 4
7000	Picton,* s-l, Holywell, fully paid	1 0 0	... 5 ...	5
12000	Plynlimmon, l, Llanidloes*	3 0 0	6s. ...	4s. 6s.
10000	Port Nigel,* s-l, Carnarvonshire	2 0 0	... ¾ ...	⅛ ¾
2000	Prideaux Wood, t, Llanivery	5 0 0	... — ...	...
5182	Prince of Wales, c, Calstock‖	2 6 0	1s. ...	6d. 1s.
6000	Relistian Consols, c, Gwinear	0 10 0	... ⅝ ...	½ ⅝
15000	Rookhope, l, Durham*	1 10 0	... ¾ ...	⅝ ¾
4200	Snowbrook, s-l, Montgomery	5 0 0	... — ...	...
000	So. Cwmystwith, l, Cardiganshire	2 0 0	... 3 ...	2¼ 3
3000	South Darren, l, Cardigan*	1 10 0	... 2½ ...	1⅞ 2⅛
30000	South